ART BELL & HEAVEN'S GATE • SON OF 'ALIEN AUTOPSY' ORIGINATOR SPEAKS • 50 YEARS OF UFOS: *THE UFO INVASION*

Skeptical Inquirer

THE MAGAZINE FOR SCIENCE AND REASON
Volume 21, No. 4 • July/August 1997

What *Really* Happened at ROSWELL
Kal K. Korff

SPECIAL REPORT

HEAVEN'S GATE UFO Cult
Paul Kurtz
Martin Gardner
Joe Nickell
and others

Amazing Free-Energy Claims of Dennis Lee
Eric Krieg

Secrets of a Russian Psychic
Massimo Polidoro

Chiropractic: Science, Antiscience, Pseudoscience
Joseph C. Keating Jr.

Published by the Committee for the Scientific Investigation of Claims of the Paranormal

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The SKEPTICAL INQUIRER (ISSN 0194-6730) is published bimonthly by the Committee for the Scientific Investigation of Claims of the Paranormal, 3965 Rensch Rd., Amherst, NY 14228-2743. Printed in U.S.A. Second-class postage paid at Amherst, New York, and additional mailing offices. Subscription prices: one year (six issues), $32.50; two years, $54.00; three years, $75.00; single issue, $4.95.

Inquiries from the media and the public about the work of the Committee should be made to Paul Kurtz, Chairman, CSICOP, Box 703, Amherst, NY 14226-0703. Tel.: (716) 636-1425. FAX: 716-636-1733.

Manuscripts, letters, books for review, and editorial inquiries should be addressed to Kendrick Frazier, Editor, SKEPTICAL INQUIRER, 944 Deer Drive NE, Albuquerque NM 87122. FAX 505-828-2080. For Guide for Authors, see the January/February 1997 issue, page 65, or send a fax request to the Editor.

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Subscriptions, change of address, and advertising should be addressed to: SKEPTICAL INQUIRER, Box 703, Amherst, NY 14226-0703. Or call toll-free 1-800-634-1610 (outside U.S. call 716-636-1425). Old address as well as new are necessary for change of subscriber's address, with six weeks advance notice. SKEPTICAL INQUIRER subscribers may not speak on behalf of CSICOP or the SKEPTICAL INQUIRER.

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On the Cover: Maj. Jesse Marcel, a key figure in the Roswell UFO story, poses with Roswell "wreckage" in 1947. (Photo courtesy Special Collections Division, University of Texas at Arlington Libraries, Arlington, Texas.)

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EDITOR'S NOTE

UFOs and the Deadly Pull of Space Age Beliefs

This summer marks the fiftieth anniversary of the birth of the modern UFO movement.

On June 24, 1947, media worldwide reported Kenneth Arnold's sighting of nine disk- or saucer-shaped flying objects near Mt. Rainier, sparking similar reports elsewhere and producing the world's first major flying saucer flap. In this charged atmosphere came a report, on July 8, that an air base had recovered a flying saucer northwest of Roswell, New Mexico, an embarrassment retracted the next day by the Air Force and quickly forgotten.

In the ensuing decades, mere "sightings" of UFOs in the sky have become passé, to be replaced by ever-more-dramatic (and increasingly unbelievable) reports of alien contacts and alien abductions. In the meantime, the long-forgotten, flash-in-the-pan "crashed saucer" report out of Roswell was resurrected by a new generation of UFO promoters and believers, and—especially with the story's incorporation into last year's summer blockbuster *Independence Day*—it has now achieved icon-level status. The people of Roswell—no dummies they—have eagerly exploited the believers' passion by promoting tourism to accommodate them.

We have reported extensively in these pages on the Roswell claims (see the box on page 32 listing our stories), most significantly in recent years on the revelation about New York University/Project Mogul scientific balloon/nuclear detection experiments as the almost certain stimulus for the original Roswell recovered-debris report (*SI* January/February 1995 and July/August 1995).

These, and all other major *SI* articles about UFOs, the Roswell crashed-saucer claims, alien abductions, and crop circles have been incorporated into a new book, *The UFO Invasion*, coinciding with the fiftieth anniversary of Roswell and available through Prometheus Books. It is the first-ever single-subject anthology of *SI* articles. See details on page 9.

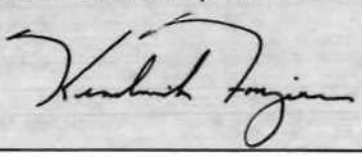
With the anniversary upon us, we thought it useful and timely to publish as our cover article in this issue, Kal K. Korff's "What *Really* Happened at Roswell," based on his investigations for his new book, *The Roswell UFO Crash: What They Don't Want You to Know*. It provides new insights and data and, to my mind at least, puts a final kibosh on the notion that what crashed at Roswell in 1947 was otherworldly.

* * *

Something otherworldly is what the Heaven's Gate cult was all about. Critics of UFO movements, paranormal claims, and New Age belief systems are often asked, "What harm are they?" The mass suicide of Heaven's Gate cult members vividly answered that question. The gullibility, the yearning for something beyond this world, the absence of critical thinking, the willingness to follow, the all-consuming desire to believe—all wrapped up in a mishmash of New Age and conventional religious concepts involving alien spacecraft, alien visitors, and afterlives on a new level beyond human existence—marked the cult for doom. How many more are there?

In this issue's Special Report, Paul Kurtz, Martin Gardner, Joe Nickell, and Thomas Casten all explore the issues surrounding Heaven's Gate. Tom Genoni reports on his interview with Art Bell, whose notorious nationally syndicated radio show widely promoted the outlandish idea, adopted by the Heaven's Gate people, that an alien spacecraft was trailing Comet Hale-Bopp.

We are seeing a whole new variety of Space Age religions. With the turn of the millennium coming, we can expect to see more bizarre events that shock the public mind and call for all measures possible to foster scientific literacy, critical thinking, common sense, and skepticism.



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Anachronistic Danger Sign in 'Alien Autopsy'

The following was provided to the SKEPTICAL INQUIRER *by Mr. John R. English.*

I am a past director of the International Aerospace Hall of Fame (IAHF), San Diego Air and Space Historical Center. During my time as director, I was involved in the search, selection, and installation of several U.S. and foreign astronauts, as well as other significant aviation-related candidates. Research and photo evaluation were a common chore.

This note is the result of some time spent reviewing the room contents as seen in the "Alien Autopsy" film. I realize that this subject has been scrutinized to death (so to speak), but there is, to the best of my knowledge, one glaring omission from the analyses—the Danger sign on the wall to the left of the telephone.

During the early 1980s I was responsible for re-signing a large industrial facility in southern California to bring the various hazard signs up to OSHA (Occupational Safety and Health Administration) requirements for that time. This involved the review and replacement of signs indicating dangerous and hazardous environments in and around the facility.

When I first saw the "Alien Autopsy" film, I felt that the Danger sign looked all too familiar. I decided to research the graphic format of the sign. This involved an archival search with OSHA and an additional search of the ANSI (American National Standard Institute) archives. The results were most interesting: they confirmed what I originally suspected. The graphic format used in the Danger sign was adopted by ANSI in 1967, Ref. ANSI index Z53.1-1967, and approved for OSHA in 1973, with implementation to be achieved by 1983, Ref. OSHA index 1910.145.

All said and done, it is very unlikely that a sign with a graphic design originating in 1967 would be available for use in a 1940s environment or film.

John R. English lives in San Diego, California.

The Carl Sagan Memorial Service

An atheist's memorial service held in a cathedral? Yes, Carl Sagan's was held February 27 at New York City's Cathedral Church of St. John the Divine, the one featuring a statue of God (a bearded Caucasian with His arms outstretched) on the front facade. The former dean, James Parks Morton, referred to "Carl the great atheist," and Sagan's nontheism was also cited by Harry H. Pritchett, the present dean, and Joan Brown Campbell, the general secretary of the National Council of the Churches of Christ in the USA. The cathedral was chosen because of Sagan's record of having successfully worked with church leaders on environmental matters.

MIT physicist Philip Morrison, who is confined to an electronic wheelchair, related how at the age of six Sagan had been told that you can always add 1 to a number, and Carl had tested this by laboriously writing all the numbers from 1 to 1,000, stopping only because he had to sleep.

Sagan's curiosity never diminished, for he went on to solve the mysteries of the high temperature of Venus (a massive greenhouse effect), the seasonal changes on Mars (windblown dust), and the reddish haze of Titan (complex organic molecules).

Harvard paleontologist Stephen Jay Gould remarked that unlike Sagan, the Brooklyn garment worker's son who turned his eyes upwards to the skies, he as a boy in Queens had turned his eyes downward to the ground. He added that the two New Yorkers had not known each other until much later. Ending an eloquent summary of how important Sagan had been to the entire scientific community, as well as the world's other peoples, Gould paraphrased Longfellow, saying Sagan had turned the spheres and left no hell below.

Ronald Sagedeev, who had been Mikhail Gorbachev's adviser and director of the USSR's Space Research Institute, called Sagan a citizen of the world, one who was against the false promises of the Star Wars defense, and said "the Cold War was ended because of Carl Sagan and his friends."

Other speakers included Irwin Redlener, a pediatrician-friend who called attention to Carl's passion, humor, and forgiveness. Neil deGrasse Tyson, director of New York City's Hayden Planetarium, told of Sagan's consideration when, as a young black college student, he had first gone to Cornell for an interview (see his comments in the May/June *SI*, p. 56). Frank H. T. Rhodes, who had been President of Cornell University during much of the time Sagan headed Cornell's Laboratory for Planetary Studies, called Carl "a scientist but a humanist at heart," one who was comfortable with philosophy.

One of Carl's daughters, Sasha, described how her father had taught her logic, critical reasoning, and (to the large audience's amusement) the importance of questioning authority. Carl's son Jeremy said that his agnostic father was a warrior for the world, an avid antiracist, an evolutionist rather than a creationist, and one who disapproved of anyone who masked ignorance by using jargon.

Carl's wife, Ann Druyan, secretary of the Federation of American Scientists, told of his and her exuberance at their having included an interstellar message along with the music of Bach, Beethoven, and others in two NASA Voyager spacecraft now beyond the

outer solar system. At a speed of 40,000 miles per hour, the recordings are traveling in space and have a projected "shelf life" of a billion years.

Vice President Al Gore noted that he, the believer, and Carl, the nonbeliever, had no problems whatsoever working together on behalf of Earth's environment. The two were instrumental in getting scientific and religious leaders to unite on issues of environmental protection. Carl had shown him that we are not central to the universe and that we must do something significant if "the blue dot" as seen from space is to flourish. Gore was both folksy and eloquent in relating his warm memories of Sagan.

The most eloquent of all, however, was Carl Sagan himself. A taped excerpt of his *Pale Blue Dot: A Vision of the Human Future in Space* resounded with an awesome timbre over the loudspeakers.

—*Warren Allen Smith*

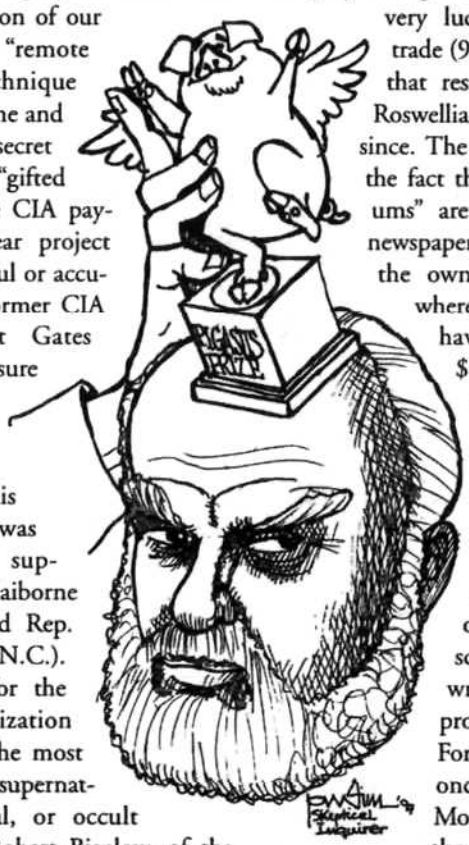
Warren Allen Smith is an editorial associate of Free Inquiry *magazine.*

Randi Foundation Announces 'Pigasus' Awards

Editor's Note: Each spring, on April 1, James Randi, the irrepressible scourge of psychic flim-flam artists and other pretenders to special knowledge, issues awards to those he decides deserve his special spotlight of attention. This year's "Pigasus" awards were issued by Randi through his new James Randi Educational Foundation. He enthusiastically agreed to share them with SKEPTICAL INQUIRER *readers:*

On April 1, we awarded the coveted Pigasus prizes in four categories for accomplishments in 1996. The awards were announced via telepathy, the winners were allowed to predict their winning, and the Flying Pig trophies were sent via psychokinesis. We sent; if they didn't receive, that's probably due to their lack of ability. This year, the awards were as follows:

The award for the scientist who said or did the silliest thing related to the supernatural, paranormal, or occult went to scientist/physicist Ed May, who headed the CIA project which consumed $20 million of our tax money on "remote viewing," a technique said to bypass time and space to obtain secret information via "gifted psychics" on the CIA payroll. The ten-year project provided no useful or accurate data, and former CIA director Robert Gates implied that pressure from members of Congress drove the CIA's involvement. This failed project was enthusiastically supported by Sen. Claiborne Pell (D-R.I.) and Rep. Charlie Rose (D-N.C.).



The award for the funding organization that supported the most useless study of a supernatural, paranormal, or occult claim went to Robert Bigelow, of the Bigelow Tea family. Mr. Bigelow not only gave large sums of money to Harvard University's Professor John Mack and to million-seller author Budd Hopkins on the strength of their "alien abduction" beliefs, but also purchased (for a purported $230,000) a "haunted ranch" in Utah where UFO attacks and "interdimensional portals" had shown up, in the wake of mysterious "cattle mutilations." Mr. Bigelow lives, perhaps understandably, in a walled-in home in Las Vegas.

The award for the media outlet that reported as fact the most outrageous supernatural, paranormal, or occult claim was divided among the multitude of newspapers, magazines, TV programs, and radio shows that have continued—despite the wealth of contrary evidence—to perpetuate the myth known as the Roswell incident, which claims that an alien spacecraft crashed near Roswell, New Mexico, in July 1947, and that bodies of the aliens were spirited away by U.S. government agencies. The very lucrative UFO tourist trade (90,000 tourists a year) that resulted has supported Roswellians handsomely ever since. The media have ignored the fact that the "UFO museums" are only collections of newspaper clippings, and that the owner of the property where the aliens are said to have crashed charges $15 a head to see the spot, while the town officials have moved the "authentic" site onto land owned by the U.S. Forest Service, due to the uncooperative land owner. And, not one scrap of extraterrestrial wreckage has ever been produced! The U.S. Air Force explanation that once-top-secret Project Mogul was the source of the crashed UFO debris—balsa wood, mylar foil, and tape—continues to be ignored.

The award for the "psychic" performer who fooled the greatest number of people with the least effort went to "psychic" Sheldon Nidle of Walnut Creek, California, who predicted that the end of the world would come on December 17, 1996, when "millions of space ships" accompanied by angels would arrive along with "the Photon Belt." He assured us that we would have "16 years of light 24 hours a day" after the Photon Belt "hits [our] DNA." When December 17 apparently came and went without the promised events being evident, Sheldon explained that

we naturally were unaware of the fulfillment of his prophecy, since we are now living in a special holographic projection created by the angels, and we've been given another chance to make good. What a relief!

—James Randi

Quebec's Lieutenant-Governor Confers with Dead in Accepting Appointment

William Lyon Mackenzie King was Canada's longest serving prime minister, leading Canada through World War II and shocking Canadians when his posthumously published diaries revealed he regularly talked with the spirits of the departed. Now, the province of Quebec's new lieutenant-governor, Lise Thibault, has made it clear that she shares King's paranormal beliefs, if not his political savvy in keeping quiet about it.

One day after being sworn in, Thibault, the first woman to hold this post, told reporters that she conferred with her ancestors in deciding whether to accept appointment to the vìceregal post from Prime Minister Jean Chrétien. According to Thibault, she was able to accept the prime minister's offer in fifteen minutes.

The lieutenant-governor is the Queen's representative in a province. While the position is largely ceremonial, a lieutenant-governor officially has executive power and must sign each bill passed in the legislature in order for it to become law. The lieutenant-governor is also responsible for convening and dissolving parliament.

The *Montreal Gazette* (February 1, 1997) quoted Thibault describing her spiritual round table. "They were my grandparents, they were my father and my mother, they were my friends, they were my aunts, my uncles."

Even former prime minister King renounced the use of spiritual advice in political decision making after he received a startlingly inaccurate report once from the other side. But then, he only had his mother and his beloved pet dog to confer with.

Thibault did not say whether she would call on her dead relatives in the event of a parliamentary crisis in Quebec, where separatists currently have a majority of seats in the provincial legislature.

—Michael Bonner

Michael Bonner lives in Nepean, Ontario.

Library Journal's 'Best Sci-Tech Books'

Martin Gardner's *The Night Is Large: Collected Essays 1938-1995* (St. Martin's Press, reviewed in *SI,* November/December 1996) has been selected one of 1996's Best Sci-Tech Books by the *Library Journal.* The publication said the collection is "polymath Martin Gardner's best book. . . . One of the premier scientific essayists, Gardner has an impressive and influential body of work. The 47 essays . . . are among his very best and provide an excellent overview to his expansive corpus."

Other books of likely special interest to SKEPTICAL INQUIRER readers were also among the thirty-six selected to the list (*Library Journal,* March 3, 1997): Carl Sagan's *The Demon-Haunted World* ("fitting epitaph to the late, prolific advocate of science"), Richard Dawkins's *Climbing Mount Improbable* ("this elegant work is also one of *LJ*'s 'Best Books of 1996'"), Stephen Jay Gould's *Full House: The Spread of Excellence from Plato to Darwin,* Anthony Aveni's *Behind the Crystal Ball: Magic, Science, and the Occult from Antiquity Through the New Age,* Daniel Schacter's *Searching for Memory,* Marcia Angell's *Science on Trial: The Clash of Medical Evidence and Law in the Breast Implant Case,* Donald Johanson and Blake Edgar's *From Lucy to Language,* David L. Goodstein and Judith R. Goodstein's *Feynman's Lost Lecture: The Motions of Planets Around the Sun,* and John Horgan's *The End of Science.* □

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Center for Inquiry Institute Launches Three-Year Academic Program

JOE NICKELL

A program of intensive education in skepticism and rationalism has been successfully launched by the Center for Inquiry Institute, an educational institution co-sponsored by the Committee for the Scientific Investigation of Claims of the Paranormal (CSICOP), publisher of the SKEPTICAL INQUIRER, and the Council for Secular Humanism, publisher of *Free Inquiry* magazine. In addition to increasing public awareness of the need for critical thinking across the spectrum of human concerns, and providing specific courses in that regard, the goal of the Institute's new program is to prepare leaders and spokespersons for science and reason in the future.

The Institute was founded in 1987 by philosopher Paul Kurtz and is operated by the two organizations also founded by him, CSICOP and the Council for Secular Humanism. The Institute began as the sponsor of an informal series of seminars and workshops. Although these were popular and fulfilled their purpose, they presented only a first step toward a more ambitious goal: a permanent program that confers on its graduates a certificate of proficiency, ensuring that the bearer has undergone rigorous training and examination over a broad range of studies.

This new goal has involved building a permanent home for the Institute—the new Center for Inquiry–International building in Amherst, New York—along with outreach centers across the United States (currently in Los Angeles, California; Boulder, Colorado; and Kansas City, Missouri). There is also a Centre for Inquiry–Oxford at Oxford University, England, and a Center for Inquiry–Moscow is forthcoming in Russia. Each center will have a research library, the one at the international headquarters already approaching some 20,000 volumes, in addition to periodicals. The international headquarters also has a nearby residence for visiting scholars.

In addition, an international faculty has been appointed, its members being chosen for their diverse interests and distinguished professional training, as well as the level of respect their scholarship has earned over the years. In addition to Kurtz, a professor emeritus of philosophy at the State University of New York at Buffalo, and Vern Bullough, the Institute's dean and a professor of history at California State University at Northridge, faculty members include: Ray Hyman, professor of psychology, University of Oregon; Mario Bunge, professor of philosophy, McGill University, Canada; Jean-Claude Pecker, professor of astronomy, College de France; Eugenie Scott, physical anthropologist and executive director of the National Center for Science Education; and many more.

The Institute offers certificates in two program areas: (1) Science and the Paranormal, which examines alleged paranormal phenomena and other fringe-science claims, and (2) Humanistic Studies, which examines the nature of social and ethical conduct while criti-

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CSICOP and the *Skeptical Inquirer* changed the terms of discussion in fields ranging from pseudoscience and the paranormal to science and educational policy. You can take an enduring step to preserve their vitality when you provide for the *Skeptical Inquirer* in your will.

Your bequest to CSICOP, Inc., will help to provide for the future of skepticism as it helps to keep the *Skeptical Inquirer* financially secure. Depending on your tax situation, a charitable bequest to CSICOP may have little impact on the net size of your estate—or may even result in a greater amount being available to your beneficiaries.

We would be happy to work with you and your attorney in the development of a will or estate plan that meets your wishes. A variety of arrangements are possible, including: gifts of a fixed amount or a percentage of your estate; living trusts or gift annuities, which provide you with a lifetime income; or a contingent bequest that provides for the *Skeptical Inquirer* only if your primary beneficiaries do not survive you.

For more information, contact Barry Karr, Executive Director of CSICOP, at (716) 636-1425. All inquiries will be held in the strictest confidence.

cally exploring and contrasting the roles of reason, freethought, and religion. Both programs offer core courses in critical thinking and communication skills, while the Science and the Paranormal program offers additional seminars such as Introduction to Paranormal Phenomena, Psychology and Belief, and the History and Philosophy of Skepticism; and the Humanistic Studies program offers Humanistic Ethics, the Scientific Examination of Religion, and the History and Philosophy of Humanism.

The two programs also conduct periodic workshops. Among the shared workshops are Evolution vs. Creationism and Leadership Training. In addition, the Science and the Paranormal track features the ever-popular Skeptic's Toolbox; Astrology: A Scientific Appraisal; Evaluating UFO Claims; Investigating Hypnosis and Related Phenomena; Magic for Skeptics; Investigative Tactics and Techniques; Critical Examination of Parapsychology; Alternative Health; and others. Workshops offered for the Humanist Studies program include Biblical Criticism; Sexual Ethics; Separation of Church and State; Social and Political Philosophy; Humanist Ceremonies; History, Theory, and Practice of Organized Humanism; and many more.

To complete either program, students must pass five courses (at three credit units each) and four workshops (at two units each), followed by a research paper or thesis (an additional seven units) for a total of thirty credit units for each program. Once one certificate has been earned, the other may be obtained with less effort due to the overlapping of some courses and workshops.

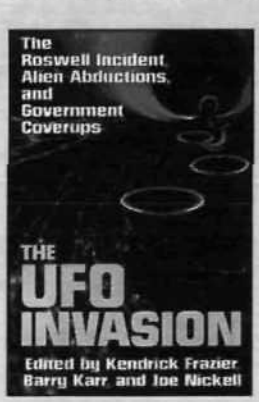
Currently, these are three-year programs. At least one dual session will be held annually at the Amherst headquarters, while additional sessions will be held around the United States—frequently at one of the outreach centers. A few courses and workshops may also be offered by correspondence, and some credit may be given—at the discretion of the Institute—for equivalent prior training or experience. Also, some scholarships may be available. The Centre at Oxford, an accredited research institute of Oxford's Westminster College, offers a special certificate in the Study of Humanism/Critical Studies in Religion.

For information and an academic catalog, please write to the **Center for Inquiry Institute, P.O. Box 703, Amherst NY 14226-0703**, or call (716) 636-1425. Those wishing to audit (no credit earned) may do so at the same cost as those enrolled in the program. Those wishing to enroll should ask for an application form.

Already, the newly expanded Institute has held sessions at Amherst (August 1996) and Los Angeles (January 1997) with forthcoming sessions planned for Eugene, Oregon (August 1997), and San Diego (January 1998). The cause of science and reason is being well served. □

Joe Nickell is CSICOP's senior research fellow and associate dean of the Center for Inquiry Institute.

SI Announces Release of *The UFO Invasion*


The Roswell Incident, Alien Abductions, and Government Coverups
THE UFO INVASION
Edited by Kendrick Frazier, Barry Karr, and Joe Nickell

Is planet Earth being regularly visited by extraterrestrial spacecraft? Was there ever a crash of an alien ship, with the recovery of bodies of the strange creatures? Have human beings been abducted by aliens, put through bizarre ceremonies and tests, and lived to tell about it?

The UFO Invasion: The Roswell Incident, Alien Abductions, and Government Coverups, a new special collection of SKEPTICAL INQUIRER articles just released from Prometheus Books, answers these and other questions with unique, insightful, in-depth investigations into UFO-related claims that span the years 1947 to today. This volume, edited by SKEPTICAL INQUIRER editor Kendrick Frazier, CSICOP executive director Barry Karr, and CSICOP senior research fellow Joe Nickell, details the first "sighting" of flying saucers in Washington State, the "discovery" of mysterious debris in New Mexico, and how the two incidents were tied together to incite national interest and later hysteria through unsubstantiated and eventually disproved media reports. Since those early days, the UFO phenomenon has escalated to incorporate claims of abductions, torturous testing on animals and humans by aliens, crop circles, an "alien autopsy," and much more. UFO stories from fifty years ago are now being resurrected for television, inspiring a whole new generation of misled believers.

The title of *The UFO Invasion*, as editor Kendrick Frazier explains in the introduction, does not mean alien craft are landing en masse across the United States. Rather, it means we are being invaded by thousands of anecdotal and media reports of everything from abductions to government coverups of UFO "evidence"—reporting that *needs* investigation and evaluation. Containing forty entries from the SKEPTICAL INQUIRER, this book provides a much-needed dose of critical intelligence and scientific reasoning. According to one review in *Booklist*, the volume is "...valid and true.... Much to ponder for UFO fanatics and students."

Included are revealing contributions from Robert A. Baker, Robert E. Bartholomew, Joseph A. Bauer, William B. Blake, Robyn M. Dawes, C. Eugene Emery Jr., Zen Faulkes, John F. Fischer, Kingston A. George Jr., Philip J. Klass, SETI coordinator Thomas P. McDonough, Joe Nickell, James E. Oberg, Peter J. Reeven, Ian Ridpath, Robert Sheaffer, Armando Simon, Lloyd Stires, Trey Stokes, Dave Thomas, USAF Col. Richard L. Weaver, Jeff Wells, and Robert P. Young.

For book information contact: Prometheus Books, 59 John Glenn Drive, Amherst, New York 14228-2197, (800) 853-7545.

Fund for the Future

CSICOP AT THE CENTER FOR INQUIRY

An Unprecedented $20 Million Drive for the

Human beings have never understood the material universe as thoroughly as they do today. Yet never has popular hunger for superstition, pseudoscience, and the paranormal been so acute.

CSICOP and the *Skeptical Inquirer* are leading advocates for skepticism nationally and worldwide. But so much more must be done in the years to come.

Day and night, the Center for Inquiry has become a focus of academic and popular inquiry.

Publishing revenues alone cannot fund the bold outreach today's challenges demand. Hence the Fund for the Future Campaign, a ten-year effort to add 20 million dollars to the Center for Inquiry endowments.* Gifts and endowment income will fund projects including:

Council for Media Integrity

Formed just weeks after its inclusion in the Ten-Year Plan, the Council for Media Integrity will monitor and rebut media programs that convey unfounded claims and mislead the public about science. Members include Steve Allen (chair), Carl Sagan, Stephen Jay Gould, and many others. CSICOP will invest in electronic infrastructure to facilitate rapid response to irresponsible programs.

Adult Education

The Council cosponsors the Center for Inquiry Institute, which has already expanded its offerings to include a new three-year certificate program in science and skepticism. Sessions are scheduled in Amherst and Los Angeles.

Enhancing Library Resources

The Center for Inquiry's skeptics' library—already the finest of its kind in the world—needs expanded funding to enlarge its core collection and add electronic media. Worldwide modem access to the library's catalog is already nearly complete.

*Combined endowment goal of CSICOP and the Council for Secular Humanism, both nonprofit tax-exempt educational organizations.

Steve Allen
Honorary Co-chair

Martin Gardner
Honorary Co-chair

uture of Science and Reason

The New Ten-Year Plan

To continue its leadership in the defense of reason, CSICOP has articulated a Ten-Year Plan designed to:

- *Promote science and reason*
- *Develop public support and participation*
- *Develop The Center for Inquiry as an education and research center*
- *Build up the Committee's resources*

The Center for Inquiry attracts global media attention with scholarly conferences and events like this public "Friday the 13th Superstition Bash."

For the Young

To present skeptics' message more compellingly to the young, CSICOP will develop new materials—ranging from age-appropriate print publications to audio and video cassettes and instructional courseware. Goals include enhanced understanding of science and improved critical thinking skills.

Regional Outreach

With the establishment of The Center for Inquiry - West (Los Angeles), The Center for Inquiry - Midwest (Kansas City) and The Center for Inquiry - Rockies (Boulder, Colorado), giant steps have been taken to enhance direct field service to skeptical activists. Additional regional Centers are planned with expanded calendars of activities.

How Can I Help?

The Center for Inquiry Fund for the Future depends on generous support from each of our readers and friends. Gifts of cash, securities, and other assets are sought. A three-year pledge can make more substantial gifts surprisingly affordable. Many forms of planned giving arrangements can be arranged. All requests will be held in confidence.

Only financial support from skeptics and other friends of science can place the skeptical movement on a firm financial foundation.

At the first World Skeptics Congress in Amherst, New York, participants gave or pledged an unprecedented $201,000 to give the Fund for the Future campaign a vigorous start.

We invite you to make your commitment to the Fund for the Future today. For more information, complete and mail the postpaid reply card.

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UFO Mythology: The Escape to Oblivion

PAUL KURTZ

Heaven's Gate has stunned the world. Why would thirty-nine seemingly gentle and earnest people in Rancho Santa Fe, California, voluntarily commit collective suicide? They left us eerie messages on videotapes, conveying their motives: they wished to leave their "containers" (physical bodies) in order to ascend to a new plane of existence, a Level Above Human.

It was a celestial omen, Comet Hale-Bopp, that provoked their departure. For they thought that it carried with it a UFO spacecraft—an event already proclaimed on the nationally syndicated Art Bell radio show when Whitley Strieber and Courtney Brown maintained that a spaceship "extraterrestrial in origin" and under "intelligent control" was tracking the comet. According to astronomer Alan Hale, co-discoverer of the comet, what they probably saw was a star behind the comet. Interestingly, the twenty-one women and eighteen men, ranging in ages from twenty-one to seventy-two, seemed like a cross section of American citizens—though they demonstrated some degree of technical and engineering skills, and some even described themselves as "computer nerds." They sought to convey their bizarre UFO theology on the Internet. Were these people crazy, a fringe group, overcome by paranoia? Or were there other, deeper causes at work in their behavior?

Heaven's Gate was led by Marshall Herff Applewhite and Bonnie Lu Nettles (who died in 1985), who taught their followers how to enter the Kingdom of God. They believed that some 2,000 years ago beings from an Evolutionary Level Above Human sent Jesus to teach people how to reach the true Kingdom of God. But these efforts failed. According to documents left on the Heaven's Gate Web site, "In the early 1970s, two members of the Kingdom of Heaven (or what some might call two aliens from space) incarnated into two unsuspecting humans in Houston [Applewhite and Nettles]. . . ." Over the next twenty-five years Applewhite and Nettles transmitted their message to hundreds of followers. Those who killed themselves at Rancho Sante Fe (including Applewhite)—plus the two former members who subsequently attempted to take their lives on May 6, one of them succeeding—did so to achieve a higher level of existence.

Marshall Herff Applewhite, leader of Heaven's Gate, in his videotaped farewell message to the world.

Reading about the strange behavior of this cult of unreason, one is struck by the unquestioning obedience that Applewhite was able to elicit from his faithful flock. There was a rigid authoritarian code of behavior imposed upon everyone, a form of mind control. Strict rules and rituals governed all aspects of their monastic lives. They were to give up all their worldly possessions, their diets were regulated, and sex was strictly forbidden (seven members, including Applewhite, were castrated). The entire effort focused on squelching the per-

Paul Kurtz is the founder and chairman of the Committee for the Scientific Investigation of Claims of the Paranormal (CSICOP). *Many of our readers perhaps are aware that Paul Kurtz underwent open-heart bypass surgery in early December of last year. We are pleased to report that he has fully recovered and is back on a full schedule.—*ED.

FROM THE CHAIRMAN

sonal self. Independent thinking was discouraged.

The followers of Heaven's Gate lived under a siege morality; they were supersecretive, attempting to hide their personal identities. They were like nomads wandering in the wilderness, seeking the truths of a Higher Revelation from extraterrestrial semi-divine beings. What has puzzled so many commentators is the depth of their conviction that space aliens were sending envoys to Earth and abducting humans. They kept vigils at night, peering for streaks of light that might be UFOs, waiting for spacecraft to arrive.

We read on their Web page: "We suspect that many of us arrived in staged spacecraft (UFO) crashes, and many of our discarded bodies (genderless, not belonging to the human species), were retrieved by human authorities (government and military)."

This form of irrational behavior should be no surprise to the readers of the SKEPTICAL INQUIRER. I submit that the mass media deserve a large share of the blame for this UFO mythology. Book publishers and TV and movie producers have fed the public a steady diet of science fiction fantasy packaged and sold as real. Alarmed by the steady stream of irresponsible programming spewing forth claims that were patently false, last year CSICOP (the Committee for the Scientific Investigation of Claims of the Paranormal), publisher of SKEPTICAL INQUIRER, established the Council for Media Integrity, calling for some balanced presentation of science. We said that, given massive media misinformation, it is difficult for large sectors of the public to distinguish between science and pseudoscience, particularly since there is a heavy dose of "quasi-documentary" films. Why worry about these programs? Because, I reply, the public, with few exceptions, does not have careful, critical knowledge of paranormal and pseudoscientific claims. So far, the Council for Media Integrity's warnings have gone largely unheeded. What drivel NBC, Fox, and other networks have produced! (A notable exception to this is ABC, which we are glad to say has called upon CSICOP skeptics to present alternative views on *20/20*, *Prime Time*, and other shows.) TV is a powerful medium; and when it enters the home with high drama and the stamp of authenticity, it is difficult for ordinary persons to distinguish purely imaginative fantasies from reality. Many people blame the Internet. I think the media conglomerates, who sell their ideas as products, are to blame, not the Internet. We are surely not calling for censorship, only that some measure of responsibility be exercised by editors and producers. Interestingly, the Heaven's Gaters were avid watchers of TV paranormal programs.

CSICOP and the SKEPTICAL INQUIRER have been dealing with UFO claims on a scientific basis for more than twenty years. We have attempted to provide, wherever we could, scientific evaluations of the claims. We have never denied that it is possible, indeed probable, that other forms of life, even intelligent life, exist in the universe. And we support any effort to verify such an exciting hypothesis. But this is different from the belief that we are now being visited by extraterrestrial beings in spacecraft, that they are abducting people, and that there is a vast government coverup of these alien invasions—a "Luciferian" conspiracy, according to Heaven's Gate.

In my view, what we are dealing with is "the transcendental temptation," the tendency of many human beings to leap beyond this world to other dimensions, impervious to the tests of evidence and the standards of logical coherence, the temptation to engage in magical thinking. UFO mythology is similar to the message of the classical religions where God sends his Angels as emissaries who offer salvation to those who accept the faith and obey his Prophets. Today, the chariots of the gods are UFOs. What we are witnessing in the past half century is the spawning of a New Age religion. (This year marks the fiftieth anniversary of Kenneth Arnold's sighting of the first flying saucers over the State of Washington in 1947.)

There are many other signs that UFO mythology has become a space-age religion and that it is not based on scientific evidence so much as emotional commitment. Witness the revival of astrology today; or the growth of Scientology, which proposes space-age reincarnation to their Thetans and attracts famous movie stars such as Tom Cruise and John Travolta; or the Order of the Solar Temple, in which seventy-four people committed suicide in Switzerland, Quebec, and France, waiting to be transported to the star Sirius, nine light-years away. Perhaps one of the most graphic illustrations of this phenomenon is what occurred on April 21, 1997, when the cremated remains of twenty-four people, including Gene Roddenberry (father of *Star Trek*), Timothy Leary (former Harvard guru), and Gerard O'Neill (scientific promoter of space colonies), were catapulted into space from the Grand Canary island off of the Moroccan coast aboard an American Pegasus rocket. This celestial burial is symptomatic of the New Age religion, in which our sacred church is outer space. The religious temptation enters when romantic expectations outreach empirical capacities.

Science is based on factual observation and verification. It was perhaps best illustrated by the discovery of Comet Hale-Bopp. That the comet has been captured by the paranormal imagination and transformed into a religious symbol is unfortunate. Alan Hale deplored this extrapolation of his observations. Yet the transcendental temptation can at times be so powerful that it knows no bounds.

Incidentally, the paranormal—which means, literally, that which is alongside of or beside normal scientific explanation—was involved in other aspects of the Heaven's Gate theology. The members expressed beliefs in astrology, tarot

cards, psychic channeling, telepathy, resurrection, and reincarnation. That is why it is often difficult to ferret out and examine these claims dispassionately, for New Agers are dealing with faith, credulity, and a deep desire to believe, rather than with falsifiable facts; and they are resistant to any attempt to apply critical thinking to such spiritual questions.

Quotations from the Heaven's Gate videotape are instructive. Those who committed suicide affirmed that: "We are looking forward to this. We are happy and excited." "I think everyone in this class wants something more than this human world has to offer." "I just can't wait to get up there." These testimonials sound like those of born-again fundamentalists who are waiting for the Rapture and whose beliefs are self-validating. These confirmations of faith are not necessarily true; they are accepted because they have a profound impact on the believers' lives. Heaven's Gate gave meaning and purpose to the lives of its followers. As such, it performed an existential, psychological function similar to that of other religious belief systems. Obedience to a charismatic leader offered a kind of sociological unity similar to that provided by traditional belief systems.

One might well ask, what is the difference between the myth of salvation of Heaven's Gate and many orthodox religious belief systems that likewise promise salvation to the countless millions who suppress their sexual passions, submit to ritual and dogma, and abandon their personal autonomy, all in quest of immortality? Their behavior is similar to the more than nine hundred Jewish Zealots who committed suicide at Masada in 73 C.E., or the early Christians who willingly died for the faith, or the young Muslim Palestinians today who strap explosives to their bodies and blow themselves to kingdom come in the hope of attaining heaven. I recently visited Cairo and the Great Pyramid of Gizeh, where a ship of the dead had been uncovered. The Pharaohs had equipped a vessel to take them to the underworld, hoping thereby to achieve immortality after death. This has been transformed into a UFO craft in modern-day lingo.

Illustration by James Becker

The bizarre apocalyptic theology of Heaven's Gate is interpreted by its critics as absurd and ridiculous; yet it was taken deadly serious by its devotees, and a significant part of the UFO scenario is now accepted by large sectors of the public.

In one sense the New Age paranormal religions are no more fanciful than the old-time religions. Considered cults in their own day, they were passed down from generation to generation, but perhaps they are no less queer than the new paranormal cults. No doubt many in our culture will not agree with my application of skepticism to traditional religion—CSICOP itself has avoided criticizing the classical systems of religious belief, since its focus is on empirical scientific inquiry, not faith.

I am struck by the fact that the Seventh-day Adventists, Jehovah's Witnesses, Mormons, and Chassidic Jews were considered radical fringe groups when first proclaimed; today they are part of the conventional religious landscape, and growing by leaps and bounds. Perhaps the major difference between the established religions and the new cults of unreason is that the former religions have deeper roots in human history.

The Aum Shinri Kyo cult in Japan, which in 1995 released poison gas into a crowded subway station, killing twelve people, was made up of highly educated young people, many with advanced degrees. Unable to apply their critical thinking outside of their specialties, they accepted the concocted promises of their guru. Thus an unbridled cult of unreason can attract otherwise rational people.

The one thing I have discovered in more than two decades of studying paranormal claims is that a system of beliefs does not have to be true in order to be believed, and that the validation of such intensely held beliefs is in the eyes of the believer. There are profound psychological and sociological motives at work here. The desire to escape the trials and tribulations of this life and the desire to transcend death are common features of the salvation myths of many religious creeds. And they appear with special power and eloquence in the case of the misguided acolytes of Heaven's Gate, who, fed by an irresponsible media that dramatizes UFO mythology as true, found solace in a New Age religion of salvation, a religion whose path led them to oblivion. □

Heaven's Gate: The UFO Cult of Bo and Peep

MARTIN GARDNER

For there are some eunuchs, which are so born from their mother's womb; and there are some eunuchs, which were made eunuchs of men; and there be eunuchs which have made themselves eunuchs for the kingdom of heaven's sake. He that is able to receive it, let him receive it.

—Jesus, Matthew 19:12

The nation's shocked reaction to the suicides in March of thirty-eight happy brainwashed innocents and their demented leader at Rancho Santa Fe, California, has been twofold. It has reawakened public awareness of the enormous power of charismatic gurus over the minds of cult followers, and it has focused attention on the extent to which the myth of alien spacecraft has become the dominant delusion of our times. A recent *Newsweek* poll revealed that almost half of Americans believe UFOs are for real and that our government knows it. As if a secret this monumental could be kept by our political leaders for more than a few hours!

Rumors about space aliens and their snatching of humans show no signs of abating. Harvard psychiatrist John Mack has published a book about the abductions of his patients. The rumors are magnified mightily by endless other books, lurid movies, and shameless radio and television shows. Ed Dames, who runs Psi-Tech, a psychic research center in Beverly Hills, California, was the first to proclaim that his "remote viewers" had spotted a massive spacecraft trailing Comet Hale-Bopp.

Dames's claim was "confirmed" by three psychics at The Farsight Institute in Atlanta, headed by Courtney Brown, Dames's former pupil. Brown teaches political science at Emory University. He is as embarrassing to Emory as Mack is to Harvard, but both have tenure and can't be fired. My previous column (May/June) reviewed Brown's *Cosmic Voyage*, a crazy book telling how aliens are being shuttled to Earth to live under a mountain near Santa Fe, New Mexico.

Who was most responsible for the Rancho Santa Fe horrors? They were two neurotic, self-deluded occultists: Marshall Herff Applewhite and his platonic companion Bonnie Lu Trousdale Nettles. Their story reads like bad science fiction.

Born in Spur, Texas, in 1931, the son of a Presbyterian minister, Applewhite graduated as a philosophy major at Austin (Texas) College in 1952. He had brief stays in seminary school and in the Army Signal Corps. But gifted with good looks and a fine baritone voice, his chosen career was in singing and music. He received a master's degree in music from the University of Colorado, starring in numerous operas produced in Houston and in Boulder while pursuing his degree. Throughout his musical career, he held a number of teaching positions and conducted numerous church choirs.

For several years in the sixties Applewhite taught music at St. Thomas University, a small Catholic school in Houston. The university fired him in 1970 over an affair with a male student. Struggling to control his homosexual impulses, depressed, and hearing voices, he checked into a psychiatric hospital in 1971. He told his sister he had suffered a heart attack and had had a near-death experience.

It was in this hospital that Applewhite's life took its fateful turn. His registered nurse, Bonnie Nettles[1] (she was forty-four, he forty), was a former Baptist, then deep into occultism, astrology, and reincarnation. Somehow she managed to convince Applewhite that they were aliens from a higher level of reality who had known each other in previous earthly incarnations. In the coming months and years, they would develop their bizarre religion, believing they had been sent to Earth to warn humanity that our civilization was about to collapse as foretold in Revelation, to be replaced by a new one after the battle of Armageddon and the destruction of Lucifer. They believed that Lucifer (a cut or two below Satan), aided by his "Luciferians," had long controlled our planet. It is, in fact, Lucifer's demons who have been piloting those spaceships that are abducting humans.

How can one escape the coming holocaust? Not by being "raptured," as Protestant fundamentalists teach, but by being beamed up to spacecraft operated by benign superbeings and taken to the gates of heaven. (Judging by the recent tragedy at Rancho Santa Fe, if you are male, the best way to make this journey is to cut off your testicles then kill yourself!)

Shortly after their meeting, and fired with the divine mandate to rescue as many humans as possible from the destruction of our world as we know it, Applewhite and Nettles embarked on their mission, Nettles abandoning a husband and four children in the process.

Martin Gardner's latest book is Weird Water and Fuzzy Logic *(Prometheus 1996), a collection of sixteen recent* SKEPTICAL INQUIRER *columns plus thirty-three book reviews.*

(Applewhite, a father of two, was already divorced.) The pair quickly became inseparable in a strange bond that psychiatrists call the "insanity of two." It develops when two neurotic persons live together and reinforce each other's delusions.

Indeed, Applewhite and Nettles began calling themselves The Two. They came to believe they were the "two witnesses" described in chapter eleven of Revelation. Verse seven predicts that when the two witnesses "finish their testimony" they will be murdered. After three and a half days, God will resurrect them. A voice from heaven will say "Come up hither," and their enemies will see them taken to heaven by a "cloud."

"I'm not saying we are Jesus," Nettles wrote to her daughter. "It's nothing as beautiful but it is almost as big. . . . We have found out, baby, we have this mission before coming into this life. . . . It's in the Bible in Revelation."

The Two's first move was to open an occult bookstore in Houston. After it failed in 1973, they took to the road to gather converts. A group was started in Los Angeles called Guinea Pig. Applewhite was Guinea, Nettles was Pig. Soon they were calling their movement HIM (Human Individual Metamorphosis). Later it became TOA (Total Overcomers Anonymous). Because they considered themselves shepherds to a flock of sheep, Applewhite took the name of Bo, and Nettles became Peep. Over the years they liked to give themselves other whimsical names such as Him and Her, Winnie and Pooh, Tweedle and Dee, Chip and Dale, Nincom and Poop, Tiddly and Wink. Eventually they settled on the musical notes Do and Ti.

In a 1972 interview in the *Houston Post*, Nettles said her astrological work was assisted by Brother Francis, a nineteenth-century monk. "He stands beside me," she said, "when I interpret the charts." Both Do and Ti constantly channeled voices from superbeings who lived on the Evolutionary Level Above Human, or Next Level (the Kingdom of Heaven).

It all sounds so childish and insane, yet those who attended early cult meetings, mostly on college campuses, have testified to the pair's persuasive rhetoric. Early converts were mainly young hippies, drifters, and New Agers, disenchanted with other cults, eager to be told what to believe and do.

In 1975 about twenty followers were recruited in the seaside village of Waldport, Oregon, then taken to eastern Colorado where they expected to board a flying saucer and be carried to the Next Level. It was a vague region ruled by the great EGB (Energy God Being). When the spacecraft failed to appear, it was such a blow to Bo and Peep that they plunged underground for seventeen years.

There was a period when The Two preached that the "Demonstration" foretold in Revelation 11 would occur. As I said earlier, this would be their assassination, followed by their resurrection and journey to the Heavenly Kingdom in a spacecraft that the Bible called a cloud. "The chances it won't happen," Applewhite told a *New York Times* reporter in 1976, "are about as great as that a rain will wash all the red dirt out of Oklahoma." The interview got him fired as choir director of St. Mark's Episcopal Church in Houston.

"How a Member of the Kingdom of Heaven might appear" (from the Heaven's Gate Web site).

Never sexual lovers, the peculiar pair surfaced in the mid-seventies as leaders of about fifty followers who wandered with them here and there. They camped out or lived in motels with funds donated by wealthy recruits or obtained from odd jobs and occasional begging. For several years they hunkered down in a camp near Laramie, Wyoming. HIM was now a full-blown cult with members strictly regulated by what they called the Process. Recruits assumed new names. Sex, alcohol, tobacco, and pot were taboo. Ti, whom Do always considered his superior, died of cancer in 1985 after losing an eye to the disease. Until his suicide, Do said he was in constant communication with Ti, who had reached the Next Level.

Precise details about the cult's nomadic history remain obscure. Do convinced his sheep that they, too, were aliens from the Next Level, now incarnated in a body they called the soul's container, vehicle, instrument, or vessel. When the time was right, they would all be teleported to one of the spaceships operated by angels.

Time reported (August 27, 1979) that cult members were then wearing hoods and gloves, obeying "thousands" of rules, studying the Bible intensely, and undergoing periods in which they communicated with each other only by writing. It's not easy to believe, but the cult received so much media attention in the late seventies that a TV series called *The Mysterious Two* was planned. A pilot actually aired in 1982 featuring John Forsythe and Pricilla Pointer as The Two.

After the Internet became widely available to the public, the cult intensified its recruiting by way of a Web site called Heaven's Gate. A few followers had developed sufficient skills not only to go online, but also to run a service called Higher Source that designed Web sites for customers.

In 1996 the cult rented a sprawling, Spanish-style villa, with pool and tennis court, in Rancho Santa Fe, a few miles north of San Diego. The rent was $7,000 a month. Members began the day with prayers at 3 A.M., ate only two meals a day, had their hair cropped short, and wore baggy clothes to make themselves look genderless and unsexy. Their lives were more regulated than the lives of soldiers. Guns were stored just in case government forces attacked them as they had done to the Branch Davidians

in Waco. Meticulous plans were drawn for a mass suicide as soon as the higher beings gave them a "marker" in the heavens. The marker, Do decided, was the giant spacecraft that psychics had convinced him (perhaps verified by the voice of Ti) was following Comet Hale-Bopp. A lunar eclipse on March 23, 1997, may have strengthened the sign.

Haunting videotapes were made on which the smiling and happy sheep said how joyfully they were looking forward to escaping from their vehicles and from a doomed planet. "We are happily prepared to leave 'this world' and go with Ti's crew," they posted on their Web site. Evidently they believed their beloved Ti was on the Hale-Bopp spacecraft!

As everyone now knows, eighteen men and twenty-one women put themselves to sleep with phenobarbital mixed into pudding or applesauce, and washed down with vodka. Plastic bags were tied over their heads so they would suffocate in their sleep. Faces and upper bodies of the "monks," as they called themselves, were neatly covered with a square of purple cloth. All thirty-nine were dressed alike—black shirts, black pants, and black Nike running shoes. The last two to die were women with bags on their heads but unshrouded by a purple covering.

The most perplexing aspect of these ritualized deaths were the neatly packed travel bags beside their bunks, and a five dollar bill and some quarters in each of their pockets. Did they expect the superbeings to take the bags along with their souls? And what use did they suppose the money would have when they reached the spaceship?

The odor of rotting "vehicles" was so strong that the first police at the scene on March 26 suspected poison gas.

To me the saddest aspect of this insane event was the firm belief, expressed on the incredible videotapes, that cult members were killing themselves of their own free will. Nothing could have been more false. Although Do always told his robots they were free to go at any time—and hundreds had done just that—so powerful was his control over the minds of those who stayed that they believed anything he said, obeyed every order. Autopsies showed that Do and seven of his followers had been surgically castrated.

Do said he was dying of cancer. Yet his autopsy showed no sign of cancer or any other fatal illness. The wild-eyed expression on his face, reproduced on the covers of both *Time* and *Newsweek*, was not a look of illness. It was a look of madness.

Media reports have made fun of the belief that our bodies are mere containers and that in our next life we will be given glorious new bodies. This, of course, is exactly what St. Paul taught, and what conservative Christians, Jews, Muslims, and most Eastern faiths believe. Similar mixtures of New Testament doctrine with New Age nonsense is what makes so many recent cults appealing to converts with Christian backgrounds. Members of Heaven's Gate firmly believed that Jesus was an extraterrestrial sent to Earth like Do and Ti to collect as many souls as possible and lead them upward to acquire new containers. When Jesus finished his work, he went back to heaven in a UFO.

The great adventist movements in America—Seventh-day Adventism, Jehovah's Witnesses, and Mormonism—are flourishing today as never before despite the long delay in Jesus' Second Coming. As the year 2000 approaches, we can be sure that lesser doomsday cults will be popping up, many of them recruiting followers on the fast-growing Internet. None of the major adventist faiths recommend suicide, but will there be more suicides by other weird little cults that surely will be capturing the minds of lonely, gullible souls in the remaining years before 2000?[2]

So pervasive is the worldwide belief in alien UFOs that a London company recently offered to insure anyone against abduction, impregnation, or attack by aliens. About four thousand people, mostly in England and the United States, bought policies. Last October Heaven's Gate paid a thousand dollars for a policy covering up to fifty members for $1 million each. After their mass suicides, the London firm decided to abandon its insurance against space aliens.

Some insight into the sort of people who were followers of Bo and Peep can be gained from a sad story distributed by the Associated Press in early April. Lorraine Webster, age seventy-eight, now living in Rollo, Missouri, abandoned her husband in 1978 to help found Heaven's Gate. She left the cult only because of a health problem. Her daughter was among those who died at Rancho Santa Fe.

Was Lorraine Webster disturbed by the suicides? Not in the least. Like all cult members, she doesn't like to call her cult a cult. It was a "movement." Do, she told the reporter, was a "kind and wonderful man." She misses her daughter but admires her for acting "like an angel." Ti frequently talks to Ms. Webster. She recently appeared at Webster's window in the form of a "chirping bird."

At the fifth annual Gulf Breeze (Florida) UFO Conference, March 21–23, Courtney Brown announced that his psychics' most recent remote viewing of Comet Hale-Bopp showed that the spacecraft was no longer there. It had moved, he said, to a spot behind the sun. Evidently this news failed to reach Do and his sheep. However, if Do was in touch with Ti on the ship, he probably would have taken her word over Brown's.

The *Village Voice*, covering the cult in its December 1, 1975, issue, included a prophetic passage: "The whole operation has lost that silvery crazy glitter. Now it seems black, dark, and a little ugly. It has the smell of ordinary death."

Notes

1. Some sources say that Applewhite met Nettles when he was visiting a friend in the hospital. Nettles's daughter says they met at a drama school. (*New York Times*, April 28, 1997)

2. At the time I write there have been a total of five copycat suicide attempts, two of which were successful. Most notably, on Tuesday, May 6, two former Heaven's Gate cult members, Wayne Cooke and Charles Humphrey, were found in a hotel room not far from Rancho Santa Fe in an attempted double suicide. Cooke, whose wife was one of the original thirty-nine, was found dead; Humphrey was found unconscious and taken to the hospital. □

The Two: A Fantasy-Assessment Biography

JOE NICKELL

In their pioneering study of the fantasy-prone personality, Sheryl C. Wilson and Theodore X. Barber (1983) stated that, as suggested by their research data, "individuals manifesting the fantasy-prone syndrome may have been overrepresented among famous mediums, psychics, and religious visionaries of the past" (371). Wilson and Barber found that they could use biographies of mystics—like Helena P. Blavatsky (1831–1891), the founder of Theosophy—to determine whether or not such a person had the requisite fantasy characteristics. Discovering in the affirmative in the case of Madame Blavatsky, Wilson and Barber reported: "When we look further back in history, we find that famous psychics and mediums of the past also had the characteristics we have found in fantasy-prone subjects" (371). Sixteenth-century occultist Jerome Cardan, visionaries Joan of Arc and St. Bernadette of Lourdes, and others, like Christian Science founder Mary Baker Eddy (who talked with spirits), exhibited the traits of fantasy proneness. Also, "almost all [of their research subjects] who had many realistic out-of-the-body experiences and all who had the prototypic 'near-death experience,'" were fantasy prone (371–372).

Readers of this column will recall that I recently found numerous fantasy-prone characteristics among a group of persons who believed they had been abducted by aliens (Nickell 1996). Subsequently, I have been applying Wilson and Barber's suggestion about famous mystics to a number of contemporary and historical individuals, ranging from psychic sleuth Dorothy Allison and the prophetess Jeane Dixon, to faith healer Kathrynn Kuhlman, heirophant Aleister Crowley, and "sleeping prophet" Edgar Cayce. In each case, after I determine from biographies or autobiographies that the person was fantasy prone, I then write a short life history of him or her, being sure to include in the sketch sufficient evidence of the fantasy traits. I have considered fourteen potential characteristics from Wilson and Barber for these "fantasy-assessment biographies" (as I call them): (a) being an excellent hypnotic subject, (b) having imaginary playmates as a child, (c) fantasizing frequently as a child, (d) adopting a fantasy identity, (e) experiencing imagined sensations as real, (f) having vivid sensory perceptions, (g) reliving past experiences, (h) claiming psychic powers, (i) having out-of-body or floating experiences, (j) receiving poems, messages, etc., from spirits, higher intelligences, and the like, (k) being involved in "healing," (l) encountering apparitions, (m) experiencing hypnagogic hallucinations (waking dreams), and (n) seeing classical hypnagogic imagery (such as spirits or monsters from outer space). I have considered the possession of six or more of these characteristics to indicate fantasy proneness.

The following is an example of a fantasy-assessment biography. Actually it is a combined biography of the two "UFO missionaries" who founded Heaven's Gate, the cult whose adherents recently shocked the world with their mass suicide in Rancho Santa Fe, California.

* * *

Marshall Herff Applewhite (1931–1997) and Bonnie Lu Trousdale Nettles (ca. 1927–1985) were styled "UFO missionaries extraordinary" in a 1976 book by that name compiled by ufologist Hayden Hewes and paranormal pulp writer Brad Steiger (Hewes and Steiger 1976). The story of Applewhite and Nettles is a bizarre tale of fantasy that led eventually to psychosis and the annihilation of an entire cult.

Marshall Applewhite was the son of a domineering Presbyterian minister of the same name. Little is known of his childhood, but he was born in Spur, Texas, in 1931. He was, his sister said, "very outgoing and caring" as a child (Winant 1997). In 1948 he graduated from Corpus Christi High School, then attended Austin College and, briefly, Union Theological Seminary in Richmond, Virginia, where he studied sacred music. In addition, he served in the U.S. Army Signal Corps. He received a master's degree in music from the University of Colorado and was choir director at a Presbyterian school in Kingsville, Texas. Subsequently, he held the same post at several other churches (Hewes and Steiger 1976, 24–27). At some point, Applewhite married and became the father of two children.

From 1966 to 1970 he taught at the University of St. Thomas, a Roman Catholic school in Houston, and frequently sang with the Houston Grand Opera. In 1970, however, he was granted a "terminal leave of absence." According to a St. Thomas spokesperson, "He was an extremely talented musician who had health problems of an emotional nature" (Hewes and Steiger 1976, 24). The following year he reportedly checked into a Houston hospital, asking to be "cured" of homosexual desires. By this time he was divorced and had been living with a male com-

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panion. He was also "suddenly hearing voices," and he had a vision in which he was given knowledge about the world (Fisher and Pressley 1997; Hewitt et al. 1997). According to *Newsweek*: "He told his sister he had suffered a 'near-death experience' after a heart attack, but he may actually have suffered from a drug overdose, according to Ray Hill, a radio-show host in Texas who knew Applewhite at the time. 'He was kind of a Timothy Leary type,' said Hill" (Thomas et al. 1997, 31).

During this period, Applewhite met a nurse named Bonnie Lu Trousdale Nettles. They shared an interest in astrology and believed they had been acquainted in earlier lives. Nettles, who was four years his senior and married with four children, shared an asexual relationship with Applewhite who, at some point, underwent castration. Early in their association they claimed to be channeling an apparition, the spirit of a nineteenth-century monk named Brother Francis, whom Nettles had been communicating with even prior to meeting Applewhite. They would later claim that anyone who followed them would have a spirit or guardian angel to direct them in perfecting their meditation (Sachs 1980, 153; Hewes and Steiger 1976, 37). According to one biographical source, "Herff experienced unnerving astral voyages at night, and he and Bonnie were in daily contact with unseen forces and entities. . . . Both Herff and Bonnie told of vivid dreams in which beings from UFOs urged them to abandon their earthly lives" (Balch 1982, 37).

The couple set out on a tour of the United States, during which time they formulated their flying saucer religion. They saw their mission revealed in chapter eleven of the Book of Revelation, which told how two messengers from the heavens would prophesy "a thousand two-hundred-and-three-score days, clothed in sack cloth." The two would then be killed, but they would return to life in three and a half days, ascending into heaven in a cloud that Applewhite and Nettles believed was actually a UFO. Calling themselves The Two, they began to recruit followers at special meetings. Converts were expected to renounce family ties and give away all their worldly possessions in anticipation of the UFO voyage. This was predicted to occur in six months; when it did not, many disillusioned followers deserted the cult, while Applewhite and Nettles responded by extending the deadline for the expected events.

When The Two were briefly arrested on auto theft charges in 1974, Applewhite, who was sentenced to four months in jail, reportedly told the prosecutor that "a force from beyond the earth" made him keep the car (Hewitt et al. 1997, 40).

Interviewed in 1974 by Hewes, both "Herff" and "Bonnie" claimed to be aliens from "another level" (Hewes and Steiger 1976, 68). They referred to themselves as The Two and as Bo and Peep, due to their role as extraterrestrial shepherds. At times during the interview, Applewhite "would go into a trance-like state" (70). This was apparently explained in a later interview with Brad Steiger, when they claimed that their "Fathers in the next kingdom" communicated with them "mentally" (84). As special messengers of God, they taught that the body could actually be "healed" from death and taken to "the next level" (89).

Their imaginings were apparently quite real to them. One interviewer came away convinced that "what they're talking about and what they're preaching about they believe in one-hundred percent" (qtd. in Hewes and Steiger 1976, 77). Step by step, of course, they were creating their own reality. After Nettles died in 1985, Applewhite continued to lead the cult. Then came Comet Hale-Bopp and an amateur astronomer's photo of a "UFO" apparently trailing behind. Although this was actually a distant star, Applewhite and his followers apparently saw it as their long-awaited ride into the heavens. Dressed in their identical, asexual manner with short haircuts, the eighteen men and twenty-one women packed small bags of their belongings and committed suicide in shifts, eating drug-laced applesauce or pudding and lying on their bunk beds to await the prophesied encounter.

There is, I think, sufficient evidence to warrant the conclusion that both Applewhite and Nettles were fantasy-prone individuals, each exhibiting several characteristics (he: a, d, e, h, i, j, l, and m; and she: d, e, h, j, k, l, and m). Eventually, however, Applewhite completely lost contact with reality and became psychotic. A psychiatry professor who studied videotapes of his final statements concluded he was delusional, paranoid, and sexually repressed (Fisher and Pressley 1997). Thus did fantasies of the paranormal lead to gruesome reality.

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Acknowledgments

I thank psychologist Robert A. Baker for helpful advice and for reading the manuscript; Tim Binga, director of the Center for Inquiry Libraries, for research assistance; and Etienne Ríos for typing the manuscript. □

Can We Prevent Cult Deaths?

THOMAS R. CASTEN

As the world reels from the Heaven's Gate cult's pooled destiny of suicide, every parent wonders, "Is my child susceptible to this type of appeal? What can I do to inoculate my children against such senseless suicide?"

The front page of the *New York Times*, March 29, 1997, captured these feelings. "We kept hoping that someday she would just appear at the front door and we could throw our arms around her and tell her how much we loved her," said the father of twenty-six-year-old Gail Maeder, whose body was among the thirty-nine found in Rancho Santa Fe.

One organization has pondered these questions for more than twenty years. In 1976, Paul Kurtz, professor emeritus of philosophy at the State University of New York at Buffalo and a prolific author and investigator of why people suspend critical thinking, founded the Committee for the Scientific Investigation of Claims of the Paranormal (CSICOP) and SKEPTICAL INQUIRER to promote skepticism and critical thought. The effort has attracted the support of many lay people and famous scientists, including five Nobel laureates, all of whom share a concern for scientific literacy. SKEPTICAL INQUIRER has spawned over thirty other journals promoting skepticism.

Skeptics keep an open mind about all claims but insist that large claims require large proofs, and that all claims must be submitted to the rigor of the scientific method; that is, they must be proven to skeptical peers and replicated by others before general acceptance. Detailed scientific analyses exist for nearly every type of unusual or paranormal claim, from UFO sightings and dowsing to Bermuda Triangle theories and claims of alien visits. To date, none of these paranormal claims has survived peer review or met scientific standards of independent replication of results.

The Heaven's Gate home page announces Comet Hale-Bopp as the "marker" the cult had been waiting for—the sign that it was time for them to depart from this world for the Next Level.

Insistence on critical thinking can help prevent future tragedies like Heaven's Gate. The late Carl Sagan wrote prophetically in his final book, published in 1995 and appropriately titled *The Demon-Haunted World*: "Pseudoscience is embraced . . . in exact proportion as real science is misunderstood. . . ." He goes on to explain why we aren't well prepared to recognize and reject pseudoscience, noting, "It is enormously easier to present in an appealing way the wisdom distilled from centuries of patient collective interrogation of Nature than to detail the messy distillation apparatus. The method of science, as stodgy and grumpy as it may seem, is far more important than the findings of science."

We learn and benefit from the results of science but often fail to apply science's "stodgy and grumpy" methods—its skepticism and its demand for continued proof and validation of every claim. No one could have accepted the suicidal message of Heaven's Gate, or indeed of any other paranormal claim, without two prerequisites: a complete lack of skepticism and a willingness to waive all demands for proof. This lack of skepticism can be fatal.

Whether an alien spaceship was following Comet Hale-Bopp, as apparently the cult members believed, is not the issue. Some very improbable claims, like Marconi's belief that one could send voices and music many miles through thin air, have been proven true and have changed society forever. But large claims require large proofs (or, as is often said, "Extraordinary claims require extraordinary proof"). Marconi repeatedly demonstrated his claims to skeptics, and his claims were accepted only when other independent scientists had duplicated his results. Ditto every other advance by science over the past four hundred years, be it the polio vaccine, the law of gravity, or the special theory of relativity. No theory should ever be viewed as a final truth, but rather as the best possible explanation for the currently known set of facts. Each theory may be overturned when confronted with new data.

Our societal failing is not in making improbable claims, but in believing these claims without skepticism and before duplication by independent experts. Our only protection against

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repeating the tragedy of Heaven's Gate is to learn and teach how science works. We must embrace the scientific method. The lesson of Paul Kurtz, CSICOP, and all skeptics is that we must challenge every claim until it meets the tests of scientific proof. Uncritical thinking about any subject sadly begets uncritical thinking in general, and ultimately can lead to the ultimate harm.

The Heaven's Gate tragedy was possible because of society's willingness to uncritically accept paranormal claims. It is *we*, the members of society, who watch seedy network pseudo-documentary programs about UFOs or creationism that parade untested assertions and outright scientific errors as scientific fact. It is *we* who support a television channel devoted to psychic advice. It is *we* who read astrology columns as though they contain revealed wisdom. Yet all are pseudoscience and none have a shred of scientific method supporting their incredible claims. This uncritical thinking sows the seeds of disaster. People like Marshall Herff Applewhite will always show up to nurture these seeds of uncritical thinking all the way to their suicidal conclusion. □

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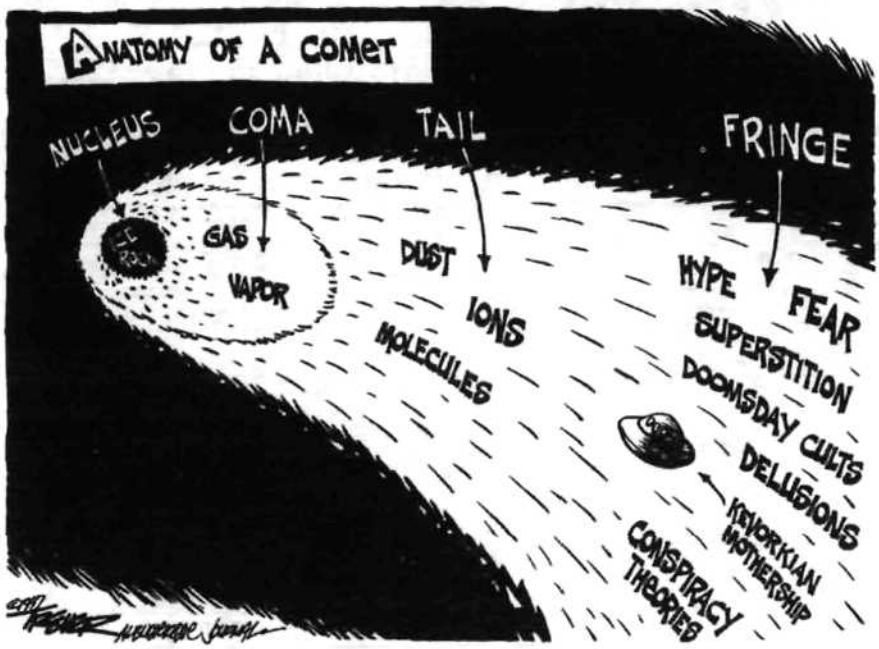
Art Bell, Heaven's Gate, and Journalistic Integrity

THOMAS C. GENONI JR.



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Following the Heaven's Gate suicides, the public learned that news of a "companion UFO" trailing Comet Hale-Bopp—a rumor spread predominately by late-night talk radio host Art Bell—may well have contributed to cult members taking their lives in an attempt to "graduate," as their Web site described it, to a "higher level" and leave Earth in a spacecraft. Bell will tell you he did nothing wrong. The full story reveals it's not quite that simple.

The *Art Bell Show,* officially *Coast to Coast AM,* began roughly thirteen years ago and is America's most syndicated late-night talk radio program. Carried five days a week on AM stations throughout the country (with a sixth show called *Dreamland* on Sundays), it regularly features a parade of paranormal oddities.

Theories about a strange object near Hale-Bopp were first made public in November of last year when Chuck Shramek, an amateur astronomer from Houston, called Art Bell's program to report that a photograph of his appeared to show a large object behind the comet, an object he speculated to be up to four times the size of Earth. The following night, Courtney Brown, a tenured professor of political science at Emory University and director of the Farsight Institute in Atlanta, was a guest on Bell's show and claimed that three "remote viewers" associated with his institute had confirmed Shramek's findings and, incredibly, had determined it to be a metallic object full of aliens. As further proof, Brown sent Bell a photograph of the Hale-Bopp "companion" (allegedly taken by someone Brown identified only as a "top-ten university astronomer") on the condition that Bell hold off displaying the image on his Web page until the astronomer in question held a news conference. (Meanwhile, astronomers analyzing Shramek's mystery object concluded it was a misidentified star, though Shramek continues to dispute this.) After two months of waiting for the secret astronomer to come forward (time also spent feeding the Hale-Bopp UFO hype), Bell decided to post the secret photograph. One day later Bell was contacted by Oliver Hainut and David Tholen, both professors from the University of Hawaii, who said that Brown's image was merely a doctored copy of one of their recent comet photos, and they provided a comparison to prove it. The image was a fake.

As one might expect, Bell took a number of steps to distance himself from the very controversy he had spent so much time promoting. Brown, who had enjoyed frequent publicity on Bell's program, was no longer welcome (to this day Brown refuses to reveal the mystery astronomer's identity). Links previously advancing the UFO story—including audio files of the November shows containing the early Hale-Bopp "companion" discussions—disappeared from Bell's Web pages. (Bell says that all of the audio files from those November shows

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were lost when a hard drive crashed.) Russel Sipe, an Internet expert who maintains a popular Internet site devoted to educating the public and combating the pseudoscience linked to the comet (www.halebopp.com), also noted that when Alan Hale paid a visit to the radio program in early March, Bell "talked about the magnificence of the comet . . . and even seemed to suggest that there was no evidence for anomalous elements surrounding Hale-Bopp."

Despite the blatant reversal of position, Bell says he doesn't regret having publicized the Hale-Bopp UFO story. "You have to remember I had several sources," Bell explains. "In addition to Shramek's photo, I had a university professor at Emory who supplied us with photographic evidence of what he said was true." Keep in mind this is the same professor who, for a mere $3,000, will teach students enrolled at his "Institute" to communicate with extraterrestrials. Nevertheless, Bell maintains that Brown and Shramek's evidence constituted "sufficient material," and he seems unconcerned that his sources eventually proved to be totally unreliable.

What about the possibility that thirty-nine people ended their lives in part because of Bell's promotion of false information? Bell doubts the cult members incorporated the "companion UFO" story into their mass suicide decision. He says that in the weeks following the Courtney Brown debacle, the "entire fraud was heavily exposed" and that the revelations all occurred two months before the Rancho Santa Fe suicides. And in a further attempt to paint himself as just another innocent reporter at the mercy of his sources, Bell asserted that "the media had it totally, utterly wrong" in their initial reports of the numbers and ages of suicide victims, as if to compare his show's unsubstantiated and pretentious banter about a massive, comet-trailing alien craft to the act of gathering details during a breaking, tragic news story. Most important for Bell, though, is that the Heaven's Gate members appeared to have been aware of the Hale-Bopp UFO debunking. The first line of their now infamous Web site reads: "Whether Hale-Bopp has a 'companion' or not is irrelevant from our perspective." However, the cult's Internet link to the Art Bell homepage also indicates it's likely they first heard about an approaching spaceship during Bell's two-month-long UFO escapade.

But whatever the Heaven's Gate cult members or anyone else may have done with the information presented on his radio show, Bell feels that is not his responsibility. "I'm not going to stop presenting my material because there are unstable people," he insists. "That's what the First Amendment is all about." Constitutional rights aside, Bell's wild Hale-Bopp tales have clearly extended beyond the confines of harmless late-night entertainment and have contributed yet another ominous paranormal myth to a public of both stable and "unstable" people regularly misinformed about science. □

A Heaven's Gate Recruiting Session in Colorado

In the spring of 1995 five representatives of what has since come to be known as Heaven's Gate were recruiting members at Koelbel Public Library in Littleton, Colorado. Two board members from the Rocky Mountain Skeptics, Bill Aldorfer and Becky Greben, attended that meeting. This is their account of what transpired.

When we arrived at the Littleton, Colorado, library in the spring of 1995, we were handed three legal-sized printed materials: "Crew From the Evolutionary Level Above Human Offers Last Chance to Advance Beyond Human," "Organized Religion (Especially Christian) Has Become the Primary Pulpit for Misinformation and the Great Cover-Up," and "UFOs, Space Aliens, and Their Final Fight for Earth's Spoils." No names, addresses, or phone numbers appeared in the materials. Authorship of only one document was attributed, and that was to "Today's Next Level Crew."

One of the five panel members opened by invoking a long period of silence ". . . to let the truth come in." They said our planet is an experiment to ascertain if humans can advance to a level above the human kingdom. To them, our level—an experiment—is only a stepping stone to the next level, which is a real place. Jesus exists on this next level and is therefore real proof that the higher level exists. UFOs, an essential part of their mythology, are monitoring the experiment and ". . . waiting to take the harvest from this planet."

The five members lectured on how the fallen angel, Lucifer, and his followers tempt humans with sex, egoism, bad habits, and poor judgment. Our addiction to these behaviors prevents us from seeing the "truth," from differentiating between what the "vehicle" (the body) wants and what the soul wants. Only by exercising mastery over the temptation to engage in these behaviors at this level can we gain the strength needed to control the more sophisticated "vehicle" in which our soul will reside at the next level. In preparation for entry to the next level, the "crew members" concentrate on changing their behavior. They claim not to engage in sex. They do not worship in the conventional sense, despite incorporating elements of Christian mythology into their system of belief. Their manifesto also contains some environmental references: the current environment is "corrupt," Earth is going to be "spaded under," our souls are going to be "recycled."

All of the panel members participated to one degree or another in articulating the group's position. The "education" of the members included suppression of their individuality and creativity, both of which were to be unleashed when they arrived at the next level. They were preparing to leave on the spacecraft—and soon, from the gist of their remarks. One of the "crew members" remarked, "It's time for us to be of service to the one who started the experiment."

—Bill Aldorfer

What *Really* Happened at Roswell

The Roswell UFO crash "mystery" has now been solved. No extraterrestrial spacecraft was involved. What did stimulate the original report was, however, quite interesting, although decidedly earthly.

KAL K. KORFF

According to much widely held public opinion, the United States government successfully recovered the remains of a crashed UFO along with its extraterrestrial occupants near Roswell, New Mexico, in July 1947. In what is now known as the "the Roswell incident," the U.S. military is said to have quickly covered up the affair and continues to shroud it in extreme secrecy even today.

If these events surrounding Roswell in the summer of 1947 actually took place, as have been claimed in several books on the subject and by numerous UFO researchers, it would certainly constitute the story of the millennium and be the greatest government-sponsored coverup of all time. Indeed, should irrefutable evidence ever surface that any

government on this earth possessed the physical remains of either an extraterrestrial spacecraft or its occupants, it is an understatement to say that such a revelation would fundamentally transform humanity as we know it.

What does one do with the numerous claims about Roswell that have surfaced over the years? How does one begin to determine the truth about what really happened in 1947 and sort the fact from the fiction?

The Roswell incident, and all that surrounds it, is a complex web of events, not easily understandable nor explainable until examined fully and in painstaking detail. In my new book, *The Roswell UFO Crash: What They Don't Want You to Know* (Prometheus Books 1997), I undertake such a dissection. The book presents the results of some sixteen years of research and, for all practical purposes, leaves no stone unturned. The Roswell "mystery" has been solved, and there is no credible evidence that the remains of an extraterrestrial spacecraft was involved.

The Original Roswell Event

For non–UFO buffs, the Roswell incident effectively began after the Fourth of July holiday weekend in 1947 when a rancher named William "Mac" Brazel reported to the local sheriff, George Wilcox, that he might have recovered the remains of "one of them flying saucers." Wilcox, according to various accounts, then contacted military authorities at nearby Roswell Army Air Field, where Major Jesse Marcel was assigned to investigate.

Marcel and two Counter Intelligence Corps agents, Sheridan Cavitt and Lewis Rickett, drove out to the ranch where Brazel worked to examine and collect the wreckage. On July 8, 1947, the public information office at Roswell AAF made the startling announcement that they had recovered the remains of a "flying disc."

However, by the next day the excitement was over. Brigadier General Roger Ramey, who had ordered the wreckage sent to him for examination at Carswell Air Force Base (also known as Fort Worth), held a press conference, with Major Marcel present, and announced that all the hoopla had been over a mistaken weather balloon, and nothing more.

With Ramey's deflating announcement, the Roswell "flying saucer" story was effectively dead and would remain so for decades. Then, in 1978, UFO researcher Stanton Friedman happened to meet Marcel. Because Marcel dredged up his recovered-saucer story, and Friedman thought he had at last found a "star" witness who could blow open the U.S. government's alleged coverup of crashed saucers and pickled aliens, the Roswell myth began anew, with Friedman as its most vocal (and visible) champion.

"Hundreds of Witnesses"

In the pro-UFO community, much fanfare has been made over the years about the "dozens" or even "hundreds of eyewitnesses" to the alleged UFO crash near Roswell.

If the near-holy reverence for the number of alleged witnesses surrounding the Roswell affair were limited to just the UFO buffs who have conducted no direct research of their own, this situation might be understandable. However, this is not the case, for the authors of numerous Roswell books play the numbers game as well.

Figure 1. Major Jesse Marcel, who was dispatched to retrieve the UFO debris on behalf of the military, poses for the press in Brigadier General Roger Ramey's office with some of the material he collected. (Photo courtesy Special Collections Division, University of Texas at Arlington Libraries, Arlington, Texas.)

In the pro-UFO book *The Truth About the UFO Crash at Roswell*, Kevin Randle and Donald Schmitt note the fact that Bill Moore, coauthor of *The Roswell Incident* (1980), interviewed "more then seventy witnesses who had some knowledge of the [Roswell UFO crash] event." Indeed, both Friedman and Moore, around the time of the initial publication of *The Roswell Incident*, boasted that they had interviewed more than "ninety witnesses."

While these double-digit figures are certainly accurate, the presentation of such a seemingly impressive number of witnesses by themselves, without qualification, is misleading. The relevant issue is not *how many* witnesses were interviewed, but rather *what type* of witnesses (i.e., firsthand, secondhand), and how truthful and accurate their statements were.

Unfortunately, a careful reading of Bill Moore and Charles Berlitz's *Roswell Incident* reveals that, despite the impressive claim of having "interviewed more than seventy witnesses," the testimonies of just twenty-five people are presented. Out of these twenty-five, only seven of them are firsthand sources who claim to have seen the alleged saucer debris, and one of these accounts is suspect. Of these seven people, however, only five claim to have actually handled the material personally, and one of them is adamant that it was not from an extraterrestrial spacecraft.

The remainder of the professed "witnesses" cited in *The Roswell Incident* are either secondhand sources (whose testimonies constitute hearsay) or people who saw no wreckage at

Figure 2. General Ramey with the debris collected by Marcel. (Photo courtesy Special Collections Division, University of Texas at Arlington Libraries, Arlington, Texas.)

all or were never present at the "debris field" during the critical time. In other words, they are not actually witnesses in the true sense of the word.

Father Time and Flawed Memories

While the pro-UFO community and the Roswell authors stress the number of witnesses, another factor in their firm belief that an extraterrestrial spacecraft crashed at Roswell is the apparent consistency of the eyewitness testimonies.

However, a careful reading of the statements presented in *The Roswell Incident* and elsewhere reveals that there are serious discrepancies among the various accounts which, when analyzed in detail and taken collectively, severely weaken the case.

One undeniable truth that many UFO advocates seem to easily forget is that when Moore and Friedman first started interviewing some of the original witnesses regarding Roswell, the recollections of these people had undoubtedly changed. If nothing else, their memories reflected the passage of nearly thirty-one years, if not more. Even the very first person interviewed, Marcel, was not questioned by Friedman until 1978, again almost thirty-one years after the event.

It is an irrefutable fact that the passage of time erodes the accuracy of one's recollections of an event. Despite this, the Roswell authors continue to stress just how "clear and sharp" their witnesses' memories are, even though nearly fifty years have now elapsed. Certainly these memories could not have improved.

Perhaps the most absurd attempt to paint the Roswell eyewitnesses and their testimonies as beyond dispute can be found in Randle and Schmitt's *The Truth about the UFO Crash at Roswell*, which was later adapted for television by Showtime, under the name *Roswell*.

In drawing a parallel between the alleged UFO events at Roswell and the assassination of President John F. Kennedy, Randle and Schmitt state, "The Roswell memories are vivid and detailed, despite the passage of so many years" and constitute a "snapshot memory."

If this is the case, to use Randle and Schmitt's analogy, then these people forgot to load film in their camera, for even the most important "star" witness to Roswell, Major Marcel, when first interviewed, could not even remember the year of the alleged UFO crash, let alone the month. Indeed, Marcel's own answer as to when this supposed "snapshot memory" event took place was simply "in the late forties"!

In my book on Roswell, I examine systematically the accounts of all major "witnesses" presented in the *Roswell Incident* and all others. For the first time, these testimonies are exposed for what they are: a mishmash of erroneous accounts, embellishments and outright confabulations. In fact, as I show, some of the people who have been touted as witnesses by the pro-UFO Roswell authors are not really witnesses at all. Here are some examples:

Lydia Sleppy: Claims she was operating a teletype machine announcing the recovery of the flying disk when her teletype suddenly went dead and broadcast an ominous message from the FBI back to her ordering her to stop broadcasting the story in the interests of national security.

Truth: A check by this author with all relevant FBI field offices and their headquarters turned up *no evidence* that the FBI sent any such message, nor did they have the monitoring equipment in place to do so. Furthermore, the type of teletype machine in use by Sleppy at the time would have required her to throw a "receiver" switch in order for her to receive an incoming transmission. There was no way that the FBI could have "interrupted" her as she claims.

Loretta Proctor: Neighbor of Mac Brazel, the rancher who originally discovered the "saucer" debris. She claims she tried to bend, burn, and break a piece of the material Brazel showed her but was unable to. Proctor's testimony is used by crashed-saucer buffs to buttress the argument that a spaceship made of unknown, exotic material crashed near Roswell.

Truth: Loretta Proctor has *changed* her story several times. She has transformed herself from a "witness" who *never saw any*

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debris, to one who now tried to bend, break, and burn the "mysterious" material. She began changing her account after her husband, Floyd, who made it very clear in earlier interviews that they had never seen any material, passed away.

Sergeant Melvin E. Brown: Brown is touted as a "witness" who saw alien bodies by Roswell authors Friedman, Randle and Schmitt, and Michael Hesemann and Philip Mantle (*Beyond Roswell*).

Truth: Melvin Brown cannot be considered a witness since he died in 1986 and was never interviewed by UFO researchers. Indeed, the only "proof" one has that Brown was a "witness" comes from his daughter, Beverly Bean, who first made the claim years after his death. No other member of Brown's family supports her claim. Furthermore, a check by this author of Brown's military file revealed that he was a cook who held no security clearance and never pulled guard duty. Also noted in the book are the blatant contradictions and changes in Beverly Bean's various accounts.

Major Jesse Marcel: The Hidden Truth

In my book I publish for the first time excerpts from the military file of Jesse Marcel, excerpts which prove that although Marcel served his country honorably, he was not a credible witness and should not be considered as such. (Despite this fact, Stanton Friedman and other pro-UFO Roswell authors consider his every word to be gospel truth.) The file is extremely incriminating, for it it clearly demonstrates that Marcel had a penchant for exaggerating things while repeatedly trying to "write himself" into the history books. Ironically, Marcel's tendency to exaggerate was specifically noted in his military file by none other than the commander of the base at Roswell at that time, in a review of his performance that was signed just after the incident occurred.

Marcel claimed that he personally flew the UFO wreckage to Carswell AFB. He could not have done so, for he was never a pilot. Despite this, Marcel claimed in numerous interviews with Friedman and former *National Enquirer* reporter Bob Pratt that he was not only a pilot but had managed to shoot down five enemy aircraft! If so, this would have made Marcel an "ace," a distinction that certainly would have been noted in his military file. Instead, there's no record of this or even anything close, and in fact it was General Ramey who specifically noted in Marcel's file that because he was not a pilot, he would be severely limited in his career opportunities in the Air Force. It's no wonder, then, that Marcel would later "blame" Ramey for the "UFO coverup" at Roswell.

Marcel claimed he had a bachelor's degree in physics and even named the universities he attended. However, when I checked with those institutions, I discovered that one of them he never attended, and he never finished his education at the other. Curiously, while Marcel blatantly lied to UFO researchers such as Friedman about his mythical educational background, he never dared make such false claims to the military. Indeed, in signed statements contained in Marcel's military file, he replies "none" when asked under oath if he had a college degree.

Figure 3. A typical weather balloon used to gather meteorological data. The above photo appeared in the *Fort Worth Star-Telegram* on July 11, 1947, to explain a number of "flying disk sightings" by Fort Worth area residents in the days following the July 8 announcement by the Air Force that it had recovered the wreckage of a flying disk near Roswell, N.M. Within twenty-four hours of the announcement, the Air Force retracted its statement, reporting that the debris was only the remains of an ordinary weather balloon, like the one pictured above. (Photo courtesy Special Collections Division, University of Texas at Arlington Libraries, Arlington, Texas.)

Does this tell us that Marcel knew his gullible UFO peers would never check on him anyway? Or did he even care? We don't know.

The book also notes that Friedman, even as of this writing, has failed to refute these devastating new revelations about his "star" Roswell witness. Indeed, in what can only be politely called lame rationalization, Friedman counters that military records are notoriously inaccurate. While this is sometimes true, the comment is irrelevant, since throughout Marcel's file his signature repeatedly appears indicating that he signed off on its contents, certifying them to be true. Until Friedman and other pro-UFO Roswell researchers bother obtaining Marcel's entire military file, they are in no position to make comments on it, let alone dismiss it.

In addition to disproving Marcel's testimony, I also systematically dismantle and refute other Roswell "eyewitness" testimonies such as those of British Major Hughie Green, Roswell mortician Glen Dennis, Rueben Anaya, Frankie Rowe, Frank Kaufmann, Jim Ragsdale, and others. In short, no credible evidence from any witness has turned out to present a compelling case that the object was extraterrestrial in origin.

Having discovered the sad truth behind many of the testimonies concerning the recovery of alleged "flying saucer" debris near Roswell, where does this leave us? With no known scientifically verifiable physical remnants to study, is there any way that we can determine the true nature and origin of the actual wreckage that was collected? Fortunately, the answer is yes, but we must first examine additional evidence.

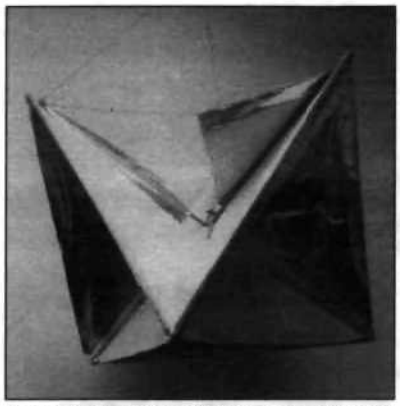

Figure 4. A radar reflector from a Project Mogul device—the *real* explanation behind the Roswell coverup. Notice the similarity between this and the shiny debris shown in Figures 1 and 2. It is also the same kind of reflector used with ordinary weather balloons, as seen in Figure 3. (Photo courtesy U.S. Air Force.)

The Air Force Coverup Begins

The beginning of the Air Force coverup of the true nature of the object recovered by Major Marcel started with Marcel's arrival at Carswell AFB and General Ramey's subsequent announcement that the debris was simply a misidentified weather balloon.

As noted, Marcel maintains that the Roswell debris was from a flying saucer and that the weather balloon "explanation" provided by Ramey was a convenient cover story.

Although Marcel's credibility as a truthful witness in the Roswell saga has been impeached, there is no disputing the fact that he accompanied the wreckage to Carswell AFB and was present in Ramey's office with him when the weather balloon explanation was given. But was there a coverup as Marcel claims, and was the weather balloon story part of that coverup?

According to Colonel Thomas J. DuBose, who was General Ramey's assistant, the weather balloon story was indeed part of the coverup, designed to get the press "taken off [Ramey's] back in a hurry."

If the Roswell incident did not involve the retrieval of wreckage from a genuine flying saucer, then why was the weather balloon story given as an "explanation," and what was the reason for the coverup? What was there to possibly hide, since the debris Marcel himself had helped recover was on display in Ramey's office?

Flying Saucer or Weather Balloon?

According to the pro-UFO Roswell authors, specifically Friedman, Randle, and Schmitt, the debris photographed inside Ramey's office is *not* the material Marcel and Sheridan Cavitt recovered from the ranch. Instead, it is the remnants of a weather balloon that were brought in as a cover story to hide the true nature of the Roswell incident.

Unfortunately for the pro-UFO Roswell advocates, the source of the claim that the wreckage in Ramey's office was replaced by that of a weather balloon is none other than, once again, Major Jesse Marcel.

The key to understanding (and unraveling) the truth behind Marcel's "bait and switch" claim is a clear understanding of the items shown in the photographs that were taken in General Ramey's office by reporter J. Bond Johnson of the *Fort Worth Star-Telegram* and others. Either the photos show the real debris that Marcel collected and claims was part of a flying saucer, or they do not. And if the photos do not show genuine flying saucer wreckage, and General Ramey's weather balloon story was true, then they depict a weather balloon. On the other hand, if the photos show neither item, then there was indeed a coverup and Ramey lied.

Clearly, both Marcel and Ramey cannot be right, since the same material appears in all the known photos taken in Ramey's office that day.

In order to determine definitively the truthfulness of Marcel's substituted wreckage claim, I have analyzed in detail both the photos and the testimonies of the only other people who were in Ramey's office when the debris was photographed—Colonel DuBose and Irving Newton. It appears that Marcel was once again confabulating.

Testimony of Brigadier General Thomas J. DuBose

As mentioned earlier, Colonel Thomas J. DuBose, who later retired as a brigadier general, was present when the wreckage was brought into Ramey's office. There's no disputing this fact, because DuBose met the B-29 personally when it arrived at Carswell AFB (Fort Worth) from Roswell carrying the debris that Marcel had collected.

DuBose not only greeted the incoming plane, but *hand carried the wreckage remnants in a sealed canvas mail pouch*, immediately escorting it to Ramey's office.

In a revealing interview, DuBose puts to rest the "mystery" of the so-called substituted wreckage and exposes it for what it is—another Major Marcel myth. DuBose's comments have never appeared before in any book on Roswell.

Q: There are two researchers (Schmitt and Randle) who are presently saying that the debris in General Ramey's office had been switched and that you men had a weather balloon there in its place.
A: Oh Bull! That material was never switched!

Q: So what you're saying is that the material in General Ramey's office was the actual debris brought in from Roswell?
A: That's absolutely right.

In a second and a third, final interview, DuBose repeated his assertions that no wreckage substitution had taken place. More important, by the time of the third interview, DuBose had looked at the photos of the recovered debris taken at that time by J. Bond Johnson. DuBose recognized the material in the photos.

Q: Did you get a chance to read the material and look at the pictures?
A: Yes, and I studied the pictures very carefully.

Q: Do you recognize that material?
A: Oh yes. That's the material that Marcel brought into Fort Worth from Roswell.

DuBose's comments are significant, because they establish that there was no substituted wreckage and that the material Marcel recovered near Roswell was later photographed and put

on display for public view in Ramey's office by Ramey himself.

I also present the testimonies of Irving Newton, who was also present that day in Ramey's office, and Sheridan Cavitt, who helped Marcel collect the wreckage from the ranch. After looking at the same debris photos, they confirmed that they depict the material they recalled seeing and that no UFO debris was ever there. In fact, both Newton and Cavitt make it very clear in their interviews that they have been misquoted by various UFO researchers, and they resent it.

Although DuBose's testimony and all available evidence easily refute Marcel's substituted wreckage claim, DuBose was adamant that there was indeed a coverup. He never knew what the Roswell object was, but he did know that it was not an ordinary weather balloon, contrary to what was claimed at that time. The question now becomes, what was the object?

Project Mogul: The Real Answer

Project Mogul was a super-secret operation in 1947 that involved the use of constant-level balloon trains that were equipped with various instruments for intelligence gathering purposes. Constant level balloon trains are clusters of balloons that are balanced so that they can float at a fairly consistent altitude and not continually rise up into the atmosphere. Project Mogul was a classified operation begun by the U.S. government after the end of World War II to spy on the former Soviet Union in order to determine the status of Russian attempts to build nuclear weapons. Project Mogul was so secret and sensitive that it had a national security rating of "Top Secret A-1," equal to that of the original Manhattan Project (the effort to build the world's first atomic bomb).

While a Project Mogul balloon array has been mentioned before as a candidate for the Roswell object, unfortunately the case for it remained unproven—until now. In my book, I present previously unpublished, formerly classified photos and drawings of various components of Mogul that can be visually compared by the reader to photos of the actual wreckage that was recovered. From these photos and drawings, it is clear that it is the same material.

I also present statements from the surviving members of the secret Project Mogul team. In particular is an interview with Professor Charles Moore, the main scientist behind Mogul's New York University balloon experiments and the man who actually launched the very balloon train that was recovered by Marcel. In addition to discussing Project Mogul and its history, Professor Moore also speaks for the first time about specific pro-UFO Roswell authors that have contacted him.

When I asked Professor Moore if UFO researcher Stanton Friedman had ever contacted or interviewed him about Roswell, he told me that in the early 1990s Friedman had placed a newspaper ad in the local paper soliciting witnesses to Roswell, and that he wrote to Friedman and later met him and his coauthor, Don Berliner, at a hotel in Socorro.

When I inquired as to how their discussion went, Professor Moore told me bluntly that Friedman and Berliner did not want to hear his side of the story and then accused *him* and his group of being part of the coverup.

It is curious that nowhere in Friedman and Berliner's *Crash at Corona* is this meeting ever mentioned, nor has Friedman ever noted it in his published writings, nor has he ever refuted the overwhelming and convincing evidence that the whole Roswell UFO hysteria was caused by people who didn't know the identity of the recovered material, the discovery of which just happened to take place during that unique period of time in mid-1947 when the flying saucer craze was first sweeping America.

Figure 5. An actual Project Mogul device after launch. Above the string of reflectors are three to five balloons which carry the device aloft. (Photo courtesy U.S. Air Force.)

Further Topics and Conclusion

The other parts of *The Roswell UFO Crash: What They Don't Want You to Know* expose the two cases where alleged physical metallic fragments were recovered and scientifically analyzed. In both instances, thorough analyses revealed that none of the fragments were extraterrestrial in origin.

I also address the issue of the Majestic-12 (MJ-12) documents. For those not familiar with the MJ-12 documents, these allegedly authentic top-secret documents were brought to the public's attention in 1987 by Bill Moore, Stanton Friedman, and another associate. They refer to a top-secret "Operation Majestic-12," supposedly created by President Truman to analyze the Roswell crashed saucer and aliens. Skeptic Phil Klass and others have shown this to be a hoax. I recount an interview with the widow and daughter of the late UFO skeptic and Harvard astronomer, Donald Menzel, an alleged MJ-12 member. Supporters of the MJ-12 papers, including Friedman, would have us believe that Menzel was a secret government "disinformation" agent who knew all about Roswell and the aliens recovered. Suffice it to say, the Menzel family are not amused by these ridiculous claims and were kind enough to share their thoughts with me, as well as provide additional evidence that their father could not have been a secret member of the non-existent MJ-12.

After maintaining my personal silence on the subject for nearly fifteen years, I finally come forth with some detailed insight into Roswell UFO researcher Bill Moore's claim that he is a UFO disinformation expert for the U.S. government. I was one of the first people Moore told this to back in 1982, some

seven years *before* he announced it in July 1989. At the time, Moore approached me and tried to recruit me on his "mission." Naturally, I declined, and began to distance myself from him.

One of the last chapters in my book examines the infamous alien autopsy film and presents a myriad of reasons why it is a hoax. Also described are some behind-the-scenes details about the production and many of the games that were played on Fox TV by the film's promoter, Ray Santilli.

The Roswell UFO Crash: What They Don't Want You to Know is the first book to thoroughly wade through the massive quagmire of Roswell evidence and finally separate the fact from the fiction. Paranoid UFO conspiracy buffs and *X-Files* fans will find that the book confirms their basic premise: Yes, Virginia, there was a "coverup," but it did not involve the remains of an extraterrestrial flying saucer.

On the other hand, pro-UFO Roswell aficionados will find the massive evidence refuting the Roswell myth in my book disturbing, and not just because their favorite UFO case has now been explained. Indeed, the message in the final chapter makes it very clear that the UFO field has suffered in credibility *because of* Roswell and especially because of the unprofessional and shoddy "standards" of evidence the Roswell authors have practiced.

Although I didn't relish wording the last paragraph in my book the way I did, I had to call things as I see them. This paragraph reads: "The time has come for the UFO community to take an *honest* look at itself in the mirror concerning Roswell. If and when they ever decide to do this, they will see for the first time that they have two black eyes and a huge hole in their head. All of which have been self-inflicted." □

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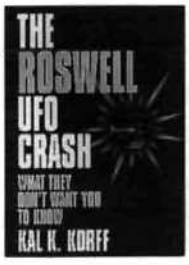
Interview with Kal Korff



SI: You've just written a book that puts the final nail in the UFO aspect of the Roswell coffin. How do you feel about that?

KK: As a UFO researcher, I am sad that the verdict came out as it did, because, if nothing else, the book is an indictment against the truly sorry state that the UFO field is in. Unfortunately, ufology's blind acceptance of the Roswell case has now come back to haunt it, and I hope this book sends a very loud message to all concerned parties, like my previous one did. If the UFO field doesn't stop this sad game of uncritical acceptance of cases like Roswell, then the field is doomed to be a bastard science at best, and deservedly so.

On the other hand I am also glad that the truth has now been found and that we can move forward to investigating other cases.

SI: What do you think your pro-UFO peers will think of your book?

KK: I don't really care. The facts speak for themselves, however painful they are this time around. But I "psychically" predict that I will be put on ufology's *persona non grata* list because of what I've done. I hope this doesn't happen, of course, but I cannot and will not compromise my quest for the UFO "truth" (whatever it eventually turns out to be) for the sake of stupid politics.

I suspect, for example, that my relationship with Stanton Friedman will suffer, as well as with others. But that's their problem, not mine. It is their fault that their faulty research has come back to haunt them. Now they have to deal with it. I'm just the messenger. When I study a UFO case, I am after the truth, whatever that truth might be, and I am not predisposed toward any point of view. Unfortunately, Roswell is not the Holy Grail the UFO promoters make it out to be.

SI: You've written two books now that have a decidedly skeptical bent, yet you claim to be "pro-UFO." Isn't this a contradiction?

KK: (Surprised) Not at all! I fully support decent, legitimate, scientific research into the UFO subject. While I believe that all UFO cases must be analyzed and considered on their own individual merits, I am for investigating the topic objectively and scientifically. I guess you could say that's a "pro-UFO" position, but I wouldn't necessarily call it that. Instead, I think, if anything, it's a scientific position and the right one to have.

SI: Do you think there's any scientifically credible hard evidence for the existence of UFOs or aliens visiting Earth today?

KK: Unfortunately as painful as this may sound to the UFO community, the answer is no, and here's why.

All UFO cases can be broken down into four fundamental categories, the first of which is a sighting, when a person sees a UFO. UFO photos and films are also included in this category since they, too, are supposed to depict what the witness or witnesses allegedly saw.

The second category includes the radar-visual cases, instances where a UFO is seen and tracked on radar.

The third category covers the landing-trace cases, incidents where a UFO allegedly hovers above or near the ground or lands and produces some sort of physical evidence to show that it has been there. Examples of such physical evidence are landing-gear impressions, radioactivity, so-called burnt rings, flattened grass, and so on.

The fourth and final category of UFO cases is the alien-being or abduction cases: instances in which the actual

alien pilots are supposedly seen in or about their craft, or have forcibly taken onboard their ship one or more human beings. Usually, these people claim they are subjected to some sort of physical examination or interrogation (sometimes with a sexual component) and are then released.

Surely the existence of millions of reports worldwide proves something, doesn't it? Of course it does, but unlike a good deal of my colleagues, I don't profess to have the answer as to what it might prove. The reason for my cautious stand rests with the very nature of this so-called evidence. To be blunt, most of it is scientifically worthless.

Consider if you will the first category of UFO data: sightings. In truth, a sighting is nothing more than a story. You can't prove it actually happened. Unless glaring evidence of a hoax is detected, all you can do is accept the person's word that what he or she is telling you is the truth. After you've gotten this far and made this leap of faith (not science), you have another problem: How can you prove that the incident actually occurred precisely the way the witness describes? Practically and scientifically speaking, you cannot.

What about the second category of UFO reports: radar-visual cases? Once again we're left with the same problem in that you cannot prove that the object in question is an extraterrestrial spacecraft. It could be a secret military vehicle for all we know.

The landing-trace or landing-track cases offer theoretically the largest potential for scientific pay dirt. But while there are more than 4,500 such reports on record, a truly unexplainable physical trace or irrefutably extraterrestrial artifact has yet to be uncovered, even in the Roswell case.

The "creature" reports and abduction reports bring us full circle to the same fundamental problem once again: they are nothing more than stories, perhaps genuine, perhaps not.

This is why I say that there is no hard scientific evidence for UFOs' being extraterrestrial spacecraft. However, keep in mind that there doesn't necessarily have to be such proof in order for a "phenomenon" to exist. I believe that whatever each UFO report ultimately turns out to be, we can only learn from these answers. As long as we strive to be scientific, objective, and apply these lessons, the subject is worth studying and we are better off for it. □

Son of Originator of 'Alien Autopsy' Story Casts Doubt on Father's Credibility

TIMOTHY SPENCER CARR

My father was Robert Spencer Carr, who achieved national fame in 1974 with the story of aliens in cold storage at Wright Patterson Air Force Base following a 1947 UFO crash in New Mexico. He died in 1994 at age eight-five in Dunedin, Florida, and as far as I know has no living relatives except me and my son. (His ashes are in my Atlanta workshop, waiting to be scattered in the headwaters of the Pecos River in New Mexico, not far from our home at the time of the alleged Roswell incident.) Now that he is gone, I finally feel free to speak out about the confabulations that so many gullible people have taken as gospel truth.

I am fifty-six, have a Ph.D. in social psychology, and have worked at the Georgia Department of Corrections for twenty-five years developing information systems, doing statistical reports, and studying the impact of criminal justice policy on crime, crowding, and recidivism. I decided to write this when, browsing the Internet, I found a site called "Robert Carr Alien Autopsy Discussion" on Critchley's UFO Sites on the Web (www.nmaa.org/member/skaeser/carr.htm). It is a lengthy verbatim transcript of the radio show on which my father first concocted the autopsy yarn.

Robert Spencer Carr was a child prodigy, publishing magazine articles before he was ten and an international best-selling novel entitled *The Rampant Age* (1928) when he was just seventeen, in the mid-1920s. He graduated from high school but never went to college or got any kind of advanced degree—yet he is called "Professor Carr" throughout the UFO literature. In many of his papers, he called himself "Dr. Carr." He started writing science fiction in 1948, right about the time when the alleged crash took place. His stories included one about flying saucers landing at the White House and the Kremlin, which he later published in a collection called *Beyond Infinity* (1951).

With his brilliant and voracious mind, he absorbed a vast storehouse of information. He could start knowledge-

able conversations with professionals in many disciplines—but he would invariably alienate them when he started acting as though he knew more about their fields than they did. To say he had a vivid imagination is an understatement. His imaginary world was more real to him than the real world. He often seemed unable—no, un*willing*—to distinguish between fantasy and reality.

Often he mortified my mother and me by spinning preposterous stories in front of company or complete strangers. Tales included finding a *Lost Horizon*–like Shangri-la in New Mexico, befriending a giant alligator in the Florida swamps, and sharing complex philosophical ideas with porpoises in the Gulf of Mexico. It wasn't the tall tales themselves that hurt so much but his ferocious insistence that they were true. They weren't tongue-in-cheek; they weren't for fun; they weren't told with the license of a raconteur. They were dead serious, and you had by God better pretend you believed them or face wrath or rejection.

But when it came to flying saucers, he finally found an audience that would believe anything he said, no matter how bizarre or unlikely.

In the mid-1970s he came to Atlanta to give a talk at Georgia Tech and invited me to attend. It was called "Flying Saucers and the CIA," as I recall, and the auditorium started out packed with about five hundred students and professors. The serious-minded started trickling out almost from the beginning, when he refused to identify sources. The trickle turned into a mass exodus when somebody asked him if he, personally, had ever had direct, up-close contact with aliens, and he answered in his deep, mellifluous *basso profundo*, "Why, yes, as a matter of fact, on four separate occasions." By the end, there was left only a small adoring cadre of a couple dozen true-believers in the front rows, and me, flaming with shame in the lobby.

When my father died in April 1994, I phoned everybody in his address book. One was James Moseley, who publishes *Saucer Smear* (www.mcs.com/~kvg/smear.htm), a UFO newsletter of the skeptical stripe. Moseley asked my opinion about an interview he and some colleagues had with my semi-invalid father ten years earlier, in 1984, which he had promised not to print until after my father's death. The following is excerpted from the article that appeared in the August 1994 *Saucer Smear*:

> [Carr] told us in some detail about a series of contacts he himself had had in 1983 with 3½-foot-tall humanoids who visited his property in a spaceship about 11 months in a row, on nights when there was no moon. These creatures came in a 19-foot-diameter craft. There were three occupants, two of whom were able to "shield their minds" from Carr's telepathic powers, whereas the third could not. . . . Their craft always landed in the small garden under the deck of Carr's home, being extremely careful not to be seen by anyone other than Carr, who seemed to share their paranoia. . . . One of the people with us . . . was a highly trained nurse, and it was her opinion that Robert Carr believed what he was telling us about the extraterrestrial visits to his home, and that his experiences were hallucinations caused by his physical condition. On the other hand, [his son] Timothy Carr probably has the real answer. He informed us on the telephone recently that his father told these stories and several other similar ones just to make himself seem more interesting. And thus we close the file on Robert Spencer Carr. . . .

In conclusion, I know with certainty that the myth/legend of the "Alien Autopsy" and UFO at Wright Patterson AFB is nothing but total fantasy, not based on even a scintilla of reality. I am so very sorry that my father's pathological prevarication has turned out to be the foundation on which such a monstrous mountain of falsehoods has been heaped.

I am not naive. It is a mathematical certainty that intelligent life exists elsewhere in the universe, and I am open to the proposition that our planet may have been visited by alien craft. I also know that government often lies through its teeth and conceals many things from the public. But, believe me, the "Alien Autopsy" is not one of them. □

Timothy Spencer Carr lives in Atlanta, Georgia.

A Roswell Reader Update

Here is an updated listing of earlier SKEPTICAL INQUIRER *articles dealing with the Roswell "crashed flying saucer" story and related matters.—The Editor*

- **"The 'Roswell Fragment'—Case Closed"** [News & Comment]—Dave Thomas (November/December 1996)
- **"That's Entertainment! TV's UFO Coverup"**—Philip J. Klass (November/December 1996)
- **"An Absence of Alien Artifacts"**—Carl Sagan (March/April 1996)
- **"How to Make an 'Alien' for 'Autopsy'"**—Trey Stokes (January/February 1996)
- **"A Surgeon's View: Alien Autopsy Plagued by Overwhelming Lack of Credibility"**—Joseph A. Bauer, M.D. (January/February 1996)
- **"The GAO Roswell Report and Congressman Schiff"**—Philip J. Klass (November/December 1995)
- **"'Alien Autopsy' Show-and-Tell"**—C. Eugene Emery Jr. (November/December 1995)
- **"'Alien Autopsy' Hoax"**—Joe Nickell (November/December 1995)
- **"The Roswell Incident and Project Mogul"** [first-person recollections by scientist Charles B. Moore]—Dave Thomas (July/August 1995)
- **Report of Air Force Research Regarding the 'Roswell Incident'** [reprinted]—Richard L. Weaver (January/February 1995)
- **"Showtime's *Roswell*"**—C. Eugene Emery Jr. (January/February 1995)
- **"Conflicting Recollections in Witnesses' Accounts of Roswell 'UFO' Crash"** [News & Comment]—Philip J. Klass (Fall 1994)
- **"New Evidence of MJ-12 Hoax"**—Philip J. Klass (Winter 1990)
- **"The MJ-12 Papers: Part 2"**—Philip J. Klass (Spring 1988)
- **"The MJ-12 Crashed-Saucer Documents"**—Philip J. Klass (Winter 1987-88)
- **"Crash of the Crashed-Saucer Documents"**—Philip J. Klass (Spring 1986)

Most of these articles are included in the just-published, single-subject SKEPTICAL INQUIRER anthology *The UFO Invasion: The Roswell Incident, Alien Abductions, and Government Coverups*, edited by Kendrick Frazier, Barry Karr, and Joe Nickell (Prometheus Books, Amherst, N.Y., 1997).

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Examining the Amazing Free-Energy Claims of Dennis Lee

Hundreds of investors believed Dennis Lee's claim of a free-energy machine. A closer look is in order.

ERIC KRIEG

In September of 1996, I saw a full-page newspaper ad promising a demonstration of amazing technologies, including one that will make free electricity from the air. On the night of September 23, I and a few other members of the Philadelphia Association for Critical Thinking (PhACT) went to see this "amazing" technology for ourselves. The city hockey stadium had been rented out for the grand finale of a thirty-four-city tour. There was a feeling of excitement (dare I say electricity?) in the air. After a brief prayer huddle with assistants, Dennis Lee took the stage amidst thunderous applause.

Thus began a five-hour, nonstop demonstration of a whole array of curious machines in the middle of the arena. The charismatic Lee said he has been victimized by a massive international, multigenerational conspiracy to keep such

amazing technologies out of the marketplace. The audience gladly signed "declarations of energy independence" that boldly declared they would no longer accept governmental [illegible]entation focused more on his unique blend of patriot politics and religion than on proof of his claims. He claimed he couldn't make good on his advertised promise to demonstrate a wonderful radiation-neutralizing invention by Yull Brown. Apparently, he had inside knowledge that government agents had infiltrated the presentation, ready to make arrests. Lee claims to have invented the world's most efficient heat pump, but conspirators sabotaged his efforts, stole his company, and incarcerated him.

For about ten years, Lee has claimed that he can produce free energy from ambient heat by connecting his heat pump to a Fischer low-temperature phase-change machine. Not surprisingly, the audience warmed to the assertion that God had given Lee the final technical help to make this possible. (In Lee's literature, he quotes many of God's exciting revelations to him.) Unfortunately, Lee's only proof of this device was to have an audience member confirm that one part of the machine was hot. Each new bold pronouncement was interrupted by ecstatic applause. Lee promised that people paying $10,000 to become dealers would be installing smaller versions of this machine in private homes across America before the end of the year. Since then, he has claimed that two thousand dealers signed up but that there will be a few delays. He seems not to have told his latest two thousand dealers that all but six of two thousand dealers of a similar effort years ago gave up on him.

Lee's elementary scientific dissertations were laced with errors: He claimed his special electricity-generating bricks would each put out one volt of energy. Volts are not units of energy. A brick exposed to acidic soil will generate voltage but at thousands of times less energy than required to light a respectable light bulb. He had a modified car engine powered by compressed gas which awed the audience by warping a fixed torque wrench. However, Lee mixed apples and oranges by referring to this torque with units of power (rather than mere force) and thus claimed his stalled engine to be more powerful than a truck engine (without explaining that the truck engine torque was rated at a high rpm level). We were also shown a perpetual-motion machine—which operated briefly and then stopped in perpetuity—and an undemonstrated small air turbine that supposedly puts out kilowatts of power in a three-mile-per-hour wind. Other technologies shown were just as underwhelming. The only truly amazing thing demonstrated to me was mass gullibility.

He collected applications from many audience members (myself included) to have their cars converted to run on little heated cylinders and for free-energy machines to be installed in homes with the excess power sold back to the nervous electric companies. Although my skeptical colleagues and I brought electrical measurement equipment and a geiger counter, we weren't allowed to use them. Nonetheless, I heard someone in the audience remark to a friend, "At least one of those inventions has got to make it big!" Finally, well past midnight, Lee got around to the inevitable—asking the remaining groggy spectators to pay $10,000 to become dealers before the price shot up to $25,000. In becoming a dealer, one waives the right to legal recourse.

The show inspired me to both study and challenge these claims. By the next morning, I had set up and started promoting a set of Internet Web pages (http://www.voicenet.com/~eric/dennis.html) dedicated to collecting and disseminating information concerning Lee's claims.

One of the first comments I received from believers was, "There must be a conspiracy to cover up Lee's claims because the mainstream media won't cover it." Ironically, that allegation has some truth to it. The media *don't* promote Lee's claims—but they don't debunk them either! Unfortunately, when the press ignores a conspiracy theory, it's just more evidence to believers that the conspiracy exists.

News of my nascent Web pages quickly traveled among the cyberspace free-energy and conspiracy communities. To the Lee investors concerned that I may be part of a government/big-oil/new-world-order conspiracy to defrock Lee, I responded with the same approach skeptic Philip J. Klass uses when accused of being a government agent: I created a Web page titled "Is Eric Krieg a Secret Agent of a Government Conspiracy?" I filled it up with references that anyone could follow to verify my independence and made an open offer for anyone to examine my unbroken record of pay stubs from high school to present. Roots as a born-again Christian seemed to buy me some credibility with Lee's followers. Throughout debates, I tried to keep shepherding people back to the the primary issue: Does the free-energy machine work?

Lee and his people rebuffed my appeals to examine his machine. I then made an open offer to spend tens of thousands of dollars promoting his device among people with the experience and equipment to validate his machines if he would just let me verify it first. Lee simply told his army that they should pay no attention to me because I was the "enemy." He certainly didn't respond to inquiries such as, "How much does your company pay the power company and gas stations?" One of my more popular Web pages documents three hundred years of free-energy and perpetual-motion frauds. Lee's marketing approach seems to follow historical patterns, like focusing on theory and politics, targeting born-again-Christian farmers, avoiding demonstrations with engineers, and endlessly prevailing upon investors to be patient through delays caused by—you guessed it—the Big Conspiracy. The only conspiracy thwarting proof of Lee's machine seemed to be Lee's own refusal to allow open testing.

Apparently, pills that turn gas into water and 100-mpg car-

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buretors have a Phoenix-like quality: After an "inventor" goes to jail or disappears prior to open demonstration, the next energy messiah refers to it as more proof of the conspiracy. I've identified a syndrome I call "buy-in mind lock." People who have invested only some investigation time see my Web pages and easily decide not to sign over a check. However, dealers who have invested money and started soliciting friends as customers are much less likely to change. Most won't answer my follow-up mail. For them, it must be very difficult to admit to circles of friends and family that they may have lost big. I expect it will be psychologically easier for Lee's dealers to borrow even more money to buy machines for installation than to cut their losses.

Apparently, I had intruded on a well-established free-energy society with its own lengthy periodicals, seminars, dutifully patient investors, and new claimants *du jour*. I received torrents of e-mail along the lines of, "OK, I'm convinced that Lee is full of it . . . but what about the new 'ACME' Energy Machine?" My full-time engineering job developing real products leaves insufficient time to investigate the many printed pounds of theory and rumor. So I openly offer a $2,000 prize, a promise of mainstream publicity, and a $1,000 finder's fee for demonstrated proof of a free-energy device. I borrowed many of my conditions from James Randi's analogous challenge. So far, there have been many inquiries but no scheduled tests. I've cultivated a network of people who feed me information, including copies of Lee's newsletter to his investors. I discovered Lee offers commissions to bring in new dealers. Also, Lee has made a considerable effort to aid and recruit from the patriot movement. Dealers are greatly discouraged from communicating with one another. Many of his original, longer-suffering investors who've lost faith are bought out with newer investors' money. A lot of that investment money went to a large nationwide advertising effort to lure new contributors.

Although, as of this writing, Lee has yet to install free-energy machines in homes across America as promised earlier this year, he recently claimed he would openly demonstrate a machine by mid-year. He refers to his dealers as "millionaires" and claims that dealerships have sold for as high as $100,000.

The *Utah Deseret News* (January 22 and February 16, 1993) reports that Lee was indicted for fraud in New Jersey in 1975, charged with fraud in the state of Washington in 1985, and pled guilty to two felony counts of consumer fraud in California in 1990 in connection with the sale of his energy-saving heat pump kit. Well, what the hell . . . they say Jim Bakker is planning a comeback, too.

Anyone still interested in becoming a dealer can contact Lee's company at P.O. Box 1406, McAfee NJ 07428. □

Are Heat Pumps the Key to Free Energy?

TOM NAPIER

The claim has been made that, since the electrical energy needed to run a domestic heat pump is about a sixth of the heat energy it puts out, one could convert some of this heat energy back into electrical form. This would generate enough power to run the heat pump and still leave some over to sell back to the utility company. In free-energy-speak the result would be an "over-unity" device. After all, if the heat pump is 600% efficient it looks as if the conversion back to electricity need only be about 30% efficient to come out well ahead.

Since the early nineteenth century it has been known that the amount of heat energy in something, a gas, a liquid, or a solid, is proportional to its temperature, measured on the Kelvin scale. (Zero degrees Kelvin is –273.2°C or –459.8°F.) A liquid at the boiling point of water, 373°K, which cools to the freezing point of water, 273°K, still contains 73% (273/373) of its original heat energy. The 27% difference represents how much of its original heat energy was extracted as the liquid cooled.

In principle, an engine with its input maintained at boiling point and its output maintained at freezing point could convert all of this 27% of the input heat energy into useful mechanical energy. The remaining 73% of the input energy is carried away by the cold output and can't be used. No engine running between these two temperatures can, even in theory, convert more than 27% of the input energy into output energy. Of course, any real engine will have a useful output of even less than 27%.

To get an electrical output, one drives a generator with the mechanical output of the heat engine. Luckily, generators are quite efficient so almost all of the available mechanical energy can be turned into electrical energy. The ideal heat engine is reversible, that is, if mechanical energy is put into it, it will output heat energy. A heat pump uses mechanical energy to move heat from a low temperature input to a high temperature output. The output heat energy is equal to the input heat energy plus the

HEAT PUMPS
continued on page 65

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Chiropractic: Science and Antiscience and Pseudoscience Side by Side

Now a century old, chiropractic is a continuing enigma partly because of its diverse intellectual and anti-intellectual traditions.

JOSEPH C. KEATING JR.

The chiropractic profession, now more than a century old, is a continuing enigma. Skeptical viewers of a videotape recently released by the Chiropractic Centennial Foundation, entitled "From Simple Beginnings," will undoubtedly recognize the traditional dogma which proclaims that "chiropractic works" and does so by freeing nerves pinched between the bones of the spinal column, thereby relieving all or nearly all disease (or "dis-ease"). Readers of George Magner's critical book *Chiropractic: The Victim's Perspective* (1995) will be similarly impressed by the unscientific, even irrational character of chiropractic revealed therein. Despite the volume's "derogatory" tone (Albers

1996), the book is noteworthy for the thoroughness with which it documents chiropractic's foibles. Religious overtones are also often found in the rhetoric of chiropractors (Fuller 1989; Keating 1989).

On the other hand, the recent guidelines issued by the federal Agency for Health Care Policy and Research (AHCPR) for patients with low-back pain endorsed chiropractors' primary treatment method—spinal manipulative therapy. And a cost-effectiveness study of chiropractic services commissioned by the Ministry of Health for the Canadian province of Ontario strongly endorsed chiropractic management of low back pain (Manga et al. 1993). Federal funding for scientific research conducted at several chiropractic colleges has recently overwhelmed the historic barriers against chiropractic science, with research grants awarded to the Los Angeles College of Chiropractic, National College of Chiropractic, Palmer College of Chiropractic, and the Western States Chiropractic College.

What is one to think? Is chiropractic science or humbug? Little help in resolving this confusion comes from chiropractors themselves, who are still a long way from consensus about their identity, their scope of clinical practice, and their relationship to other health professions.[1] The standard humor within the profession offers a first principle: For every "DC" (doctor of chiropractic) there is an equal and opposite DC. Although chiropractors seem to be united in their belief that chiropractic is a science, they vary greatly among themselves in terms of their understanding of the nature and responsibilities of science.

After thirteen years of teaching and research at several chiropractic colleges, I can say with confidence that chiropractic is both science and antiscience. Yes, there is a meaningful science of chiropractic, but just as surely there is an antiscientific mindset and even a cult within chiropractic (for example, the cult of B. J. Palmer, son of the founder of chiropractic). Moreover, if University of Connecticut sociologist Walter Wardwell is correct (Wardwell 1992), the belief systems of a majority of DCs lie somewhere between these two poles: chiropractic as science versus chiropractic as unscientific, uncritical dogma and circus. Perhaps a consideration of the nature of science will aid in understanding how the chiropractic profession does and does not approximate the rigors of science.

Concepts of Science

Our culture offers many notions about the nature of science. For some, science means perfect or near perfect predictability and control. This image is reinforced by the spectacular success of some of the more visible technologies: space flight, computers, transplant surgery. However, if the accuracy of predictions were an essential characteristic of science, then fields like meteorology and vulcanology would have to relinquish any claim to scientific status, as would many areas of health care. Reduction of error is certainly a goal for any scientific discipline, but perhaps only mathematicians, who do not ordinarily trouble themselves with actual observations of the natural world, can claim to achieve the exactness suggested by this image of science. Some chiropractors deploy this notion of science (near perfect predictability) as an easily defeated "straw man" with which to refute the meaningfulness of medical science.

A Hollywood vision of science is sometimes implied by the criticism that chiropractic has produced no discoveries to rival those of Louis Pasteur or Jonas Salk. This concept involves the belief that science means dramatic breakthroughs in knowledge. The reality of most scientific research, however, is far less glamorous, though no less important. Moreover, if this criterion of "science" were applied uniformly, many disciplines (for example, podiatry, psychology, physical therapy) would not measure up. Yet these fields are generally considered "scientific," and genuine scientific research is conducted in all of them. Nor can it be said that the chiropractic profession has not contributed, however minimally, to the scientific database bearing on manipulation and musculo-skeletal disorders.

The chiropractic profession is sometimes portrayed as lying outside of science on the grounds that "the chiropractic theory" has never been proven and may have been disproven (e.g., Crelin 1973). These assertions imply that there is only one theory of chiropractic and that the legitimacy of a profession may stand or fall upon the validation of a single theory. Critics of chiropractic repeatedly point to the century-old hypothesis that diseases are caused by nerves that are pinched in the spaces between the bones of the spinal column, and suggest that this idea is bogus. They may be correct, but there are, in fact, many theories about spinal lesions (Gatterman 1995; Leach 1994), or what chiropractors refer to as *subluxations*. (Osteopathic theorists seem to be referring to similar presumed clinical entities, which they name *somatic dysfunctions* or *osteopathic lesions*.) The problem with most of these theories is not that they have been disproven, but that they have not been adequately tested; we don't yet know which is chaff and which is wheat. We have reason to believe that spinal manipulation reduces low back pain, but whether this is due to removing subluxations or increasing circulating endorphins, or other factors, or some combination thereof, is not yet known. To further confuse the issues, there probably are many musculo-skeletal problems with symptoms that mimic organic (internal) disease (Nansel and Szlazak 1995). It's not hard to imagine that some sincere but naive chiropractors have accepted incorrect medical diagnoses of internal disorders (or incorrect reports of diagnoses from patients), and when symptoms have cleared up following manipulation, the DCs believe they have cured serious internal disorders.

Chiropractors certainly have been remiss in failing to adequately study the variety of subluxation theories they have proposed, but this does not detract from the research that has been conducted. Nor does this shortfall in hard scientific data for subluxation disallow the meaningfulness of a science of chiropractic. We would not reject psychiatry as science on the grounds that Freud's theories of anxiety, repression, or the unconscious have not been adequately tested. We do not reject

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the meaningfulness of a science of medicine on the grounds that most medical procedures have not been experimentally validated. Nor should we apply such standards to chiropractic as a determiner of its scientific viability.

An operational definition of chiropractic as science has been offered (Keating and Mootz 1987) that suggests the scientific status (or lack thereof) of chiropractic (or of any profession) can be recognized by the presence or absence of the activities of science. In other words, chiropractic may be considered science if chiropractors engage in the work of scientists. Among the activities common to all sciences are: 1) systematic observation and description of natural phenomena, 2) the making and testing of predictions (hypotheses), 3) experimentation (controlled analyses of cause/effect relationships among natural phenomena), and 4) publication of findings derived from these activities in scholarly journals where theories and data may be subjected to critical review by any interested party. By these criteria, the existence of a science of chiropractic seems unmistakable, as evidenced in the pages of several periodicals (see Table 1). Although the volume of research in chiropractic remains minimal, there is legitimate scientific activity, the scientist's "right stuff."

Yet another way of judging the meaningfulness of chiropractic as science is to consider the attitudes held by chiropractors concerning the acquisition of new knowledge. These attitudes, also called *epistemologies*, are quite diverse among chiropractors, but a particular, "scientific" attitude is reasonably well established among clinical scholars and investigators in other fields, and can be found among a subset of chiropractors.

Epistemologies in Chiropractic

Epistemology is the branch of philosophy that deals with the nature of knowledge, or how we know whatever we think we know. With respect to health care, epistemology addresses questions about how we may learn about health and illness (e.g., basic science), about how we may determine the validity of theories of treatment and prevention, and about the effectiveness of clinical procedures for restoring and maintaining health (e.g., clinical science). At the practical level of the health care practitioner, epistemology deals with questions such as which method(s) of healing will help which patients with which problems under what circumstances, and how we can make such determinations.

Throughout human history healers have relied, implicitly or explicitly, upon a variety of epistemologies in choosing their methods. Among the most common and familiar have been the various dogmas derived from or incorporating such strategies as spiritual inspiration, unchallenged precedent, casual personal experience, rationalism, and the scientific method. Often the differences among these ways of knowing "what works" have been embedded in cultural variations, such as the mysticism of the Orient versus the skepticism and "natural philosophy" of Western science. In other cases several distinct epistemological strategies may be evident within a single profession and may serve to indicate a paradigm shift within the discipline. As an example of the latter, consider the evolution of Western medicine away from a purely descriptive science and toward an experimental orientation at the dawn of the twentieth century (e.g., Martin 1993, 1994). Ironically, as medicine moved away from the descriptive epistemology of nineteenth-century science, the emerging field of chiropractic adopted the old ways of knowing and perpetuated a nonexperimental, uncontrolled system of gaining new knowledge.

Frequently, these differences in epistemology are accompanied by variations in theoretical propositions and/or by disputes over therapeutic methods, such as was evident in the osteopathic profession during its early decades (Gevitz 1982). Typically, a

Table 1: Several scholarly journals of chiropractic

Journal title	Editor(s) and editorial address	Publisher and publisher's address
Chiropractic Journal of Australia (formerly the *Journal of the Australian Chiropractors' Association)*	Mary Ann Chance, D.C., and Rolf Peters, D.C., P.O. Box 748, Wagga Wagga NSW 2650, Australia	Chiropractic Association of Australia (subscription inquiries to editors' address)
European Journal of Chiropractic	Simon M. Leyson, D.C., 16 Uplands Crescent, Swansea SA2 OPB, Great Britain	Blackwell Scientific Publications, P.O. Box 87, Oxford, Great Britain
Journal of the Canadian Chiropractic Association	Alan Gotlib, D.C., 1396 Eglinton Avenue West, Toronto, Ontario M6C 2E4, Canada	Canadian Chiropractic Association, 1396 Eglinton Avenue West, Toronto, Ontario M6C 2E4, Canada
Journal of Manipulative & Physiological Therapeutics	Dana J. Lawrence, D.C., Professor, National College of Chiropractic, 200 E. Roosevelt Road, Lombard IL 60148 USA	Williams & Wilkins, Inc., 351 West Camden Street, Baltimore MD 21201 USA
Topics in Clinical Chiropractic	Robert D. Mootz, D.C., D.A.B.C.O., Associate Medical Director for Chiropractic, State of Washington Department of Labor & Industries, P.O. Box 44321, Olympia WA 98504 USA	Aspen Publishers, Inc., 7201 McKinney Circle, Frederick MD 21701 USA

tension among the members of the profession is in evidence and continues until the shift in philosophical orientation is more or less complete. Perhaps less frequently, a profession may be locked in a state of seemingly perpetual conflict over epistemological, theoretical, and practical (technical) issues. An example of this phenomenon is found among chiropractors, who have argued among themselves for decades about such fundamental issues as who they are, what they do, what they don't do, the nature of science, and even the value of the scientific method (Keating et al. 1995). Members of the profession offer a wide variety of epistemological strategies for determining the effectiveness of the methods they use (see Table 2), all but one of which are antithetical to the wider scientific community. Although a few members of the profession have adopted a genuinely scientific attitude toward clinical practice, many (perhaps a majority of) chiropractors offer up a great deal of what might be considered the "wrong stuff" for a science.

Although individuals may employ any one or any combination of the epistemological strategies shown in Table 2, perhaps the most frequently encountered rationale for believing that "chiropractic works" involves a combination of uncritical rationalism and private, uncritical empiricism. A doctor will argue that chiropractic theory and practice are consistent with *Gray's Anatomy* (which "proves that the nerve system controls all parts of the body") and that s/he has seen repeated "proof" of effectiveness on a daily basis in her/his clinic. These assertions are often supplemented with a litany of anecdotes about "miracle" cases, by uncontrolled reports of clinical outcomes, or by incorrect or inflated assertions about research findings (e.g., Frigard 1994).

In recent years this combination of uncritical rationalism and uncritical empiricism has been bolstered by the proliferation of pseudoscience journals of chiropractic wherein poor quality research and exuberant overinterpretation of results masquerade as science and provide false confidence about the value of various chiropractic techniques. These periodicals expand on the uncritical attitudes and unproven claims for chiropractic that have long been made in the magazines published by the national membership societies of chiropractors in the United States. It is practically impossible to read any of the trade publications within chiropractic without encountering unsubstantiated claims.

Coexisting with the obvious and ubiquitous antiscientific and pseudoscientific reasoning and rhetoric in chiropractic (Skrabanek 1988) are the genuinely critical, skeptical attitudes of the still quite embryonic research community in this profession. The clinical science attitude (bottom of Table 2) has been growing slowly among DCs during the past two decades. Some see the 1975 conference on spinal manipulation sponsored by the National Institutes of Health (Goldstein 1975), which brought together chiropractors, osteopaths, medical doctors, and Ph.D. scientists, as the moment of birth for a genuine science of chiropractic (e.g., Gitelman 1984). Others would date the birth of chiropractic science to the first publication of the *Journal of Manipulative & Physiological Therapeutics (JMPT)* in 1978, or to *JMPT*'s first inclusion (in 1981) in the National Library of Medicine's *Index Medicus*, or to the publication of the first randomized, placebo-controlled clinical trial of chiropractic adjusting (Waagen et al. 1986).

I prefer to date the birth of chiropractic science to a long since forgotten commentary in the *JMPT* entitled "Notes from the (Chiropractic College) Underground" (DeBoer 1983). In this thirteen-year-old article, Kenneth F. DeBoer, then an instructor in basic science at Palmer College in Davenport, Iowa, revealed the power of a scholarly journal to empower faculty at the chiropractic schools. DeBoer's opinion piece demonstrated the faculty's authority to challenge the status quo, to publicly address relevant, albeit sensitive, issues related to research, training, and skepticism at chiropractic colleges, and to produce "cultural change" within the chiropractic schools so as to increase research and professional standards. I view DeBoer's paper as a rallying call for chiropractic scientists and scholars.

To further our understanding of chiropractic as simultaneous science, dogma, showmanship, and marketing, it may be well to look inside the chiropractic colleges: at their visible elements, their facades, and their undergrounds.

Skepticism and Chiropractic Education

Chiropractic colleges vary considerably in terms of the commitment their faculties and administrators make to critical reasoning, skepticism, science, and scholarship. At one end of the spectrum lies Life College (situated outside Atlanta), whose founding president, Sid Williams, D.C., is also a former president and former chairman of the board of the International Chiropractors' Association. With a student body in excess of four thousand, Williams is proud of having built the world's largest chiropractic institution. Although he speaks of the "science of chiropractic," he is notorious for his antiscientific attitudes and unsubstantiated claims; examples of his rhetoric include (American Chiropractic Association 1994):

> God spoke to me in very clear language on three different occasions during a five-month period telling me to commence this work.
>
> These conspirators would convince us that the "scientific approach" to chiropractic is the only approach acceptable to the public community, the professionals, the legislatures.
>
> To hell with the scientists. They haven't proven a bumble bee can fly.
>
> If you got an improved homeostasis, what damn difference does it make what diseases you're gonna be encountering. The whole germ theory comes crashing down from its tower.
>
> Rigor mortis is the only thing that we can't help!

At the other end of the ideological continuum one finds schools such as the National College of Chiropractic (situated outside Chicago), the Los Angeles College of Chiropractic (LACC), and several others. Now celebrating its ninetieth year, the National College has been a leader in scientific and

scholarly development within the profession. This commitment is particularly apparent in its founding of the *JMPT*, and more recently of the *Journal of Chiropractic Humanities*. Members of the LACC's faculty and administration have been frequent contributors to the scientific literature and collaborators with the RAND Corporation in developing systematic, evidence-based guidelines for the practice of spinal manipulation for specific health problems (e.g., Shekelle et al. 1991). The above-average commitment to scholarship and critical thinking of the LACC and the National College are further reflected in each school's initiative in developing problem-based learning for chiropractic students. Skeptical eyebrows may be raised by some of the hypotheses entertained at these schools, but a closer examination will reveal that a healthy

Table 2: Chiropractors' epistemological ("ways of knowing") strategies for determining what works or does not work for patients (theories and clinical methods)

Strategy	Reasoning mechanism	Example(s)
Founder's authority	Founder of chiropractic (D. D. Palmer) or his son (B. J. Palmer) or some other guru says so, therefore it's true; truth by fiat	"D. D. Palmer discovered the chiropractic principle"; "chiropractors since D. D. Palmer have been finding and removing the cause of disease"
Spiritual inspiration	Knowledge based on privileged communication with supernatural source	D. D. Palmer learned of chiropractic principles from the spirit of Dr. Jim Atkinson (Palmer 1910); author of a "chiropractic philosophy" text describes himself as a "scribe" for Innate Intelligence, the true author (Barge 1987)
A priori truth	Empirically testable but untested proposition is accepted/asserted to be incontrovertible	As proof of the meaningfulness of subluxation: "It just makes sense that if your have interference to your nervous system, you can't be totally healthy nor reach your full potential"; "anyone who doesn't believe in subluxation has no business at a chiropractic college"; "chiropractic is just naturally right"
Uncritical rationalism; "deductive science"	Validity of theories and effectiveness of clinical methods thought to be established by consistency with (or derivability from) more fundamental "truth" (e.g., basic science knowledge)	"Chiropractic principles are as old as the vertebrata"; "we know chiropractic works because the nerve system is the master switchboard of the body"; "we know it works because it makes sense in terms of anatomy and physiology"; basic science research offered as "proof" of clinical utility; deducibility of chirotheory and technique from some "first principle" (e.g., tone, subluxation, or Innate Intelligence) taken as proof of validity (Stephenson 1927)
Over-generalization	Embellishment; evidence in support of some derivative or sub-hypothesis is taken as proof of a broader theory or clinical method	AHCPR's endorsement of spinal manipulation for patients with low-back pain offered as proof that "chiropractic works, just like patients and chiropractors have known all along"; a single experiment involving changes in T-cells taken as evidence that "chiropractic has a profound effect on the immune system"
Selective evidence	Denial; refusal to consider theories or data that conflict with favored theory	Articles selected for a review of the literature omit and/or minimize unfavorable studies and emphasize favorable information
Private empiricism	Knowledge from unpublished, personal experience or clinical legend	"I've seen it proven everyday in my office for 20 years!"; "B. J. Palmer proved chiropractic at his Research Clinic"
Uncritical empiricism	Non–critically-reviewed and/or weak data given as "proof" of the validity of theory or technique	"Research" is published in trade magazine without scholarly critique or evaluation; anecdotes, testimonials, and non-experimental data (e.g., descriptive clinical trials and case reports) offered as substantiation of a clinical procedure
Appeal to ignorance	Absence of research offered as validation of chiropractic "principles"	"Chiropractic has never been disproven"
Repetition	None; frequent re-assertion of a claim for chiropractic	"Chiropractic works!"; "it works, it gets results, that's what counts"; "it just works"; "it REALLY works"
Non-sequitur	Irrelevancy offered to justify assertion	"If there were no such thing as subluxation, there'd be no reason for chiropractic"
Clinical science	Hypotheses drawn from basic science knowledge, prior clinical research and/or clinical experience, but strong conclusions based on experimental tests (e.g., controlled clinical trials)	The contents of the periodicals listed in Table 1; "Kaminski model" of technique evaluation (Kaminski et al. 1987)

skepticism is also present.

Other chiropractic colleges represent various points between the philosophical poles represented by Life College versus National College and the LACC. Yet within all of these institutions may be found individuals (faculty, administrators, students) whose epistemologies and commitment to skeptical inquiry are at odds with their institutions. The writer suspects that all of the reasoning mechanisms listed in Table 2 can be found at any of the chiropractic schools.

There are multiple factors to account for the variety of antiscientific attitudes found at chiropractic institutions. Many of these ideologies are embedded within the historic battle between chiropractors and organized medicine (Keating and Mootz 1989). This diversity of epistemologies is partly attributable to the traditional isolation of chiropractic schools from the mainstream of higher education in the United States. Owing to exclusion from universities and teaching hospitals and to the preference for isolation among some leaders, the faculties and students of chiropractic schools have rarely enjoyed the camaraderie of regular daily encounters with clinician-scholars, scientists, and critical thinkers in other health care disciplines. Cut off from the wider health science community, the gobbledygook so often encountered among chiropractors has usually gone unchallenged within chiropractic institutions. The habits of skeptical inquiry and critical challenge of ideas that characterize the scientific process have not until recently been part of the fabric of chiropractic education.

The hundred years war between medicine and chiropractic has fostered an extreme sensitivity and resistance to criticism among DCs. Confronted with professional extermination, as embodied in the American Medical Association's commitment to "contain and eliminate" chiropractic (Chapman-Smith 1989; Wardwell 1992), many DCs perceive any and all criticism (even from within their own ranks) as carrying the threat of annihilation (Keating and Mootz 1989). The conflict between medical doctors and DCs has also produced a penchant for marketing slogans in lieu of scientifically testable propositions. The classic example of this is the mindless reiteration that "chiropractic works," a vacuous claim which lacks specificity and is not amenable to experimental testing. However, confronted by charges that chiropractic is quackery, chiropractors have responded by insisting that "Chiropractic Works!" and have rallied satisfied patients to convince legislators and policy makers of the validity of their methods and the justness of their cause. Slogans like this are endlessly repeated not only to the public, but among DCs themselves (and to chiropractic students). To challenge the notion that "chiropractic works" is considered heresy in most corners of the profession. Rather than skepticism and critical thinking, traditional chiropractic education has sought to instill strong belief in chiropractic (Quigley 1981) among successive generations of students. In so doing the schools have strengthened the "anti-intellectual" (Coulter 1990) traditions in the profession.

Antiscientific attitudes are also reinforced by the financial realities of a century of self- and externally imposed segregation from higher education. Although federally recognized accreditation of chiropractic colleges is now in its third decade, only one of the fifteen chiropractic schools in the United States is housed in a university. And though a few states provide capitation funds for chiropractic training (Illinois, Texas), there are no state-university–based chiropractic colleges in this country.[2] Training opportunities for chiropractors in the teaching hospitals of the nation are almost nonexistent. Chiropractic education in America is overwhelmingly tuition-based, and greater than 80 percent tuition-dependence for a college's annual operating budget is common if not predominant. The educational consequences of this poverty are profound.

Entrance requirements for chiropractic colleges are low in comparison to those of other doctoral-level, health care professions, and competition for admission to chiropractic school doesn't occur to any appreciable extent. Although schools may place a ceiling on the number of students that current facilities will permit, applicants are more likely to be placed on a delayed admissions list than to be rejected. Unlike health professional training in medicine or clinical psychology, the chiropractic colleges do not enjoy the luxury of choosing only the cream of the crop. Many of the schools are magnets for New Agers, theosophists, magical and mystical thinkers, and those attracted by the low admissions standards and the lure of a lucrative private practice. Almost anyone who can accumulate sixty credit hours of undergraduate liberal arts college work[3] will be admitted to these schools and can become a chiropractor. Moreover, since the largest chiropractic colleges tend to have the strongest commitments to dogma, fuzzy thinkers are likely to fill the chiropractic ranks for decades to come.

Some chiropractic college leaders are aware of and concerned about these serious problems for scientific development and disciplined practice. However, even those courageous college administrators who are willing to challenge the status quo are unable to implement major change because of financial limitations. Unless and until the states see the wisdom of incorporating chiropractic education within the mainstream of state universities and the teaching hospitals of the nation, the tuition-dependent chiropractic institutions will continue to have their hands tied behind their backs. Chiropractic students will continue to graduate with uncritical attitudes, enormous debts (typically between $50,000 and $80,000 per student), and little or no access to the mainstream health care system (from which referrals derive). This seems like a recipe for quackery, health fraud, and student loan defaults. Students and new graduates are less likely to practice skepticism when the pressing concern is to earn.

Then, too, many college leaders would resist the incorporation of private chiropractic colleges into state-supported universities. Fear of medical domination and of loss of "distinctiveness" presumably disincline many chiropractic college boards of trustees and administrations from considering the loss of institutional control inherent in amalgamation with universities. There is an understandable paranoia born of decades of persecution (justified or not) by organized

medicine. In this sense, chiropractors' professional xenophobia extends well beyond organized medicine and helps to perpetuate nonskeptical attitudes.

Conclusions

Chiropractic is confusing because it simultaneously encompasses science, antiscience, and pseudoscience. Although available scientific data support the effectiveness of chiropractors' principal intervention method (manipulation for patients with low-back pain), the doubting, skeptical attitudes of science do not predominate in chiropractic education or among practitioners. Members of the profession, for the most part, have not yet struck that delicate balance that characterizes the "practitioner-scientist" (Keating 1992): open-mindedness in the development of theory and techniques, but caution in drawing conclusions and making claims. Nonetheless, there is a research community within chiropractic and a sprinkling of skeptics throughout the profession.

The bonesetter's art is an ancient and valuable contribution to healing. In the United States, chiropractors are the overwhelmingly most frequent providers of this service. Yet, chiropractic has evolved as an estranged child among the other health care disciplines, and its culture has nurtured antiscientific and pseudoscientific attitudes and activities. Meaningful change, including growth of science within chiropractic, will require external support, greater integration, and wider appreciation of the diversity of values and epistemologies among chiropractors.

Notes

1. There are at least four national, general professional associations of chiropractors in the United States: the American Chiropractic Association, the International Chiropractors' Association, the National Association of Chiropractic Medicine, and the World Chiropractic Alliance.

2. In Canada, on the other hand, recommendations for medically integrated chiropractic education date at least to 1916 (Biggs 1989), and the University of Quebec has recently established a chiropractic college at its Three Rivers campus. State-supported, university-integrated chiropractic education is also found in Australia, Denmark, and South Africa.

3. Of the sixty credit hours required for admission to chiropractic college, there must be at least six credits each of general (inorganic) chemistry, organic chemistry, physics, and biology, all with laboratory. Credits in the social sciences and the humanities are also required. Cumulative grade point average must be at least a "C" (2.0 on a 4.0 scale); see McNamee 1994 for more details about admissions requirements for particular schools. Minimum admission requirements are higher at some chiropractic schools.

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Acknowledgments

I wish to thank Arlan W. Fuhr, D.C., Reed B. Phillips, D.C., Ph.D., and Keith Wells, D.C., for their critical feedback concerning an earlier draft. Preparation of this paper was supported by the National Institute of Chiropractic Research and the Los Angeles College of Chiropractic. The author is solely responsible for its content.

Secrets of a Russian Psychic

Is there a rational explanation for Alla Vinogradova's extraordinary ability to move objects without touching them? A research study was conducted and an interesting and counterintuitive explanation found. However, in the process it was also found that closer cooperation with serious parapsychology is needed.

MASSIMO POLIDORO

For years, psychic research in the USSR, owing to the aura of secrecy that surrounded it, has been regarded as some kind of myth. It was being said, for example, that the Russians were far ahead in parapsychological discoveries and that the West had better invest lots of money in the field to avoid a "psi-gap." The sparse information that reached the West hinted to extraordinary faculties being scientifically demonstrated by amazing psychics. During the early 1960s, interest in Soviet paranormal claims was first aroused by newspaper articles describing the astonishing abilities of Rosa Kuleshova, a twenty-two-year-old Russian girl who apparently could read print while blindfolded (*Time*, January 25, 1963; *Life*, June 12, 1964). However, the loose conditions in which Rosa operated allowed for very easy methods of deception to be used (Gardner 1981).

In 1968, films showing Nina Kulagina apparently moving objects with her mind (psychokinesis, or PK) were

viewed at the First Moscow International Conference on Parapsychology and were also observed by some Western scientists. Finally, the general public became aware of the varied work in parapsychology carried out in the USSR with the publication of Sheila Ostrander and Lynn Schroeder's *Psychic Discoveries Behind the Iron Curtain* (1970), followed by various other similar publications on the subject.

Many films of Russian psychics at work have now been seen on Western TV shows and documentaries. The most popular are those that show apparent PK in action. We have seen, then, Nina Kulagina apparently moving compass needles and light objects, Boris Ermolaev "levitating" small objects, and Alla Vinogradova willing round objects to roll on flat surfaces.

Russian PK Stars

As for Nina Kulagina, the conditions under which she operated were far from acceptable by basic scientific standards. Tests were frequently carried out at her own home or in hotel rooms; no tight controls were ever applied, owing in part to the fact that a demonstration might take several hours of preparation (i.e., concentration by Nina), which, of course, was no guarantee of success. Also, when watching these films, anybody who has a background in magic cannot avoid the feeling that she is using standard conjuring techniques: magnets hidden on her body to move the compass needle; threads or thin hair to move objects across the table; small mirrors concealed in her hand to read signs with numbers and letters being held behind her. Unfortunately, no expert in conjuring techniques was ever present at Kulagina's demonstrations.

Boris Ermolaev, a Russian film director, became relatively famous during the 1970s for his apparent ability to suspend objects in midair by concentrating on them. Ermolaev didn't perform on stage but showed his demonstrations *"only to serious scientists of his own choosing or to close friends"* (italics mine, Gris and Dick 1986). He and others were tested by Professor Venyamin Pushkin, who stated: "The experiments were conducted under the strictest controls, and no devices of any kind were used" (ibid.). However, in a 1992 *World of Discovery* documentary called "Secrets of the Russian Psychics," Ermolaev's method was finally revealed. He used to sit on a chair and then place the objects to be suspended between his knees; unfortunately for him, the light conditions when the documentary crew was filming were probably not what he was accustomed to. That's how the TV crew was able to capture a fine thread fixed at both his knees to which he attached the objects; the whole unmasking procedure was filmed and shown during the documentary.

Alla Vinogradova is another story.

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Vinogradova's Moving Objects

A child psychologist and teacher, wife of Russian psi-researcher Victor Adamenko, Alla Vinogradova saw in 1969 a film of Kulagina in action and suspected that she too could move objects without touching them. In fact, trained by Adamenko, she discovered she could really move objects placed on transparent surfaces. Films of her demonstrations were shot in the early 1970s, and recently the previously mentioned *World of Discovery* documentary on Russian psychics had an interesting section devoted to her. Here she was presented as she is today, still demonstrating the same abilities for the camera. She took such objects as cigarettes, aluminum cigar tubes, and pens and put them on a Plexiglass plate suspended between two chairs; in such conditions she was able to make them rotate, roll, and move just by having her hand approach, but never touch, them. The demonstration was quite puzzling. It did appear very natural and repeatable and it seemed that the usual tricks (like secretly blowing on the surface to have the object move thanks to the air current thus created) were unlikely.

Some time ago, I visited James Randi in Florida; he had recently returned from Russia, where he had gone for some filming to be included in *Nova*'s 1993 documentary about his work: "Secrets of the Psychics." Randi told me that, while he was there, the TV production staff approached Vinogradova and asked if she would agree to demonstrate her abilities on camera. She agreed; however, she put forth the condition that Randi had to be kept away from the room where filming was to take place. This was quite an inappropriate request, considering that the documentary was dedicated to Randi's investigations. Nonetheless, Randi accepted her veto: this way, she would present her demonstration as she always did, that is, not under controlled conditions. It was, in any event, an occasion to film her from different angles and to have better video material for study.

The segments filmed with Vinogradova were not included in the final documentary; however, Randi had copies of the original unedited footage that he was going to show me. Vinogradova was seen speaking, in Russian, with the operators, then walking back and forth on the thick carpet, combing her hair, and rubbing with a towel the surface of a Plexiglass plate placed on top of four glasses turned upside down on a table. Originally, she started to demonstrate her abilities with various objects: cigarettes, pens, plastic rings, a small wooden doll from a set of nesting dolls, a small hairspray bottle, and a glass. All objects moved quite freely, as seen in the other films; only the spray bottle and the glass, being the heaviest objects, moved little or only wobbled back and forth as she passed her hand over them. Suddenly, while moving the nesting doll, a white thread that was on the table, under the Plexiglass, was seen to be moving too, following the doll. I pointed this out to Randi and he told me that the cameraman, after shooting the film, told him that he had seen the moving thread but didn't realize that he had actually zoomed in on it and caught it on film. Randi himself hadn't yet had a chance to examine the film so he was quite interested too. "That thread," he told me,

"was from the torn end of a cloth-based duct tape used to hold tiny microphones to the edge of the Plexiglass. The microphones were there to detect if she was doing any blowing to move the objects. The thread was not placed there purposely. It was just a loose thread. But, of course, it proved to be the indicator needed."

A Neglected Explanation?

Randi and I discussed the possibility of static electricity being solely responsible for the phenomena. In the *World of Discovery* documentary, this possibility was mentioned as an explanation proposed by skeptics, but it was immediately discarded since Vinogradova said she could move objects weighing up to two hundred grams. She claimed that it was impossible to do this using only static electricity. We thought we should try to repeat her performance with a Plexiglass plate, but, owing to other things we were involved with at the time, we didn't have a chance to get around to it before my departure.

Once back in Italy, I discussed the subject with my colleagues Luigi Garlaschelli and Franco Ramaccini of CICAP (the Italian Committee for the Investigation of Claims of the Paranormal) and soon we tested the theory of static electricity. Ramaccini found a Plexiglass plate and showed us how easy it was to move any kind of round object on top of it, only by making use of the repelling forces caused by static electricity. Of course, the effect was quite better if the surface was electrically charged, by rubbing a towel on it. Heavier objects, like glasses and spray bottles, could be as easily moved. Everything shown on Alla Vinogradova's films, then, now seemed to have a very simple and rational explanation.

We then wondered whether others had already discovered this very interesting and counterintuitive phenomenon. No trace or mention of Vinogradova's abilities appeared in the skeptical literature on the paranormal or in popular science "magic" books, and some of the best-known skeptics didn't know much about her.

I then got in touch with today's leading parapsychologists and was more than pleased to discover that they had a lot of information on Vinogradova and, above all, had solved the mystery years ago.

The Help of Parapsychologists

Stanley Krippner, psychologist at Saybrook Institute in San Francisco and past president of the Parapsychological Association, told me that he had dealt with Vinogradova in his book *Human Possibilities* (1980). In it he writes that, when he was in Russia, he observed Vinogradova in action with an aluminum tube: "She picked it up and rubbed it for a few seconds—suggesting to me that she was simply producing an electrostatic charge that would cause her hand to repel the tube. As expected, the object moved across the table" (Krippner 1980, 20). He was able to reproduce the effect once back in the United States. In his book, Krippner quotes a Canadian parapsychologist, A. R. G. Owen, who back in 1975

James Becker

wrote, "Anyone can produce this effect. . . . It is entirely due to static electricity" (ibid., 46).

Richard Broughton, director of the Rhine Research Center in Durham, North Carolina, explained to me that: "Adamenko had a notion that he could 'train' people to produce Kulagina-like effects by starting them out moving objects by static electricity, and then gradually moving them to objects that would not be susceptible to static electricity effects" (Broughton 1996).

A Lesson to Be Learned

Although the more impressive feat of moving objects not susceptible to static electricity hasn't so far been publicly demonstrated by Vinogradova or others, I think there's a lesson to be learned. Serious skeptics and serious parapsychologists should establish more occasions for mutual cooperation. Parapsychologists shouldn't be generally thought of by skeptics as more gullible than other researchers (although there have been many examples of such cases) simply because they may have a more open attitude toward psi. Some of the best skeptical investigations in early psychical research were carried out by members of the Society for Psychical Research. More impor-

tant, however, is the fact that today parapsychologists are quite aware of the pitfalls of experimenting with self-proclaimed psychics, and they either make use of experts in psychic fraud or, like Richard Wiseman of the Perrot-Warrick Research Unit at the University of Hertfordshire, England, have themselves developed an expertise in this field.

I hope the era of hard fights between proponents and critics of parapsychology is over. The time has come for a new era of cooperation, where there may be agreement on some basic points, namely, that it is in both sides' interest to get rid of superstition and charlatans, and also that it is in both sides' interest to examine the claims, rather than simply argue over them. I am not saying that there may be real psi to be discovered, but, at least, that there may be something interesting to be discovered about human psychology.

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Acknowledgments

I thank the following persons for their kind help and cooperation with this research: Carlos S. Alvarado, Richard S. Broughton, Luigi Garlaschelli, Stanley Krippner, Franco Ramaccini, James Randi, and Nancy Zingrone. Thanks also to these persons for their useful suggestions: Eberhard Bauer, John Beloff, Susan Blackmore, Ray Hyman, Lewis Jones, Robert L. Morris, and Marcello Truzzi. □

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A Classic Evaluation of Psychological Enigmas

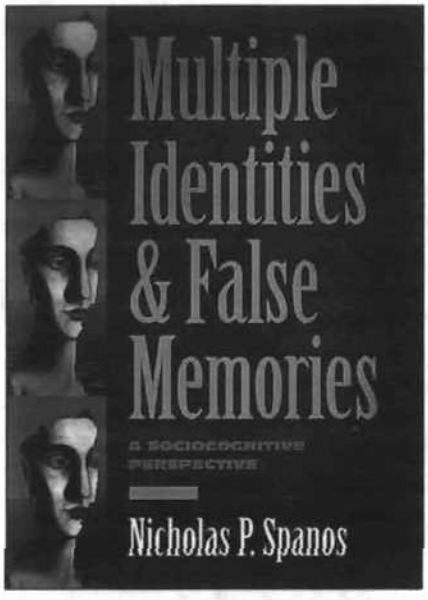
ROBERT A. BAKER

Multiple Identities and False Memories: A Sociocognitive Perspective. By Nicholas P. Spanos. American Psychological Association, Washington, D.C. 1996. 371 pp. Hardcover, $29.95.

This book is the culmination of more than two decades of research, as well as the summary and synthesis of more than 250 publications, by the late Dr. Nicholas Spanos and his collaborators on the nature of a number of highly controversial psychological enigmas: hypnosis and its use as a therapeutic tool, memory and particularly the role of false memories in the allegations of sexual abuse, and the precise nature of so-called "multiple-personality" disorders. Spanos's contributions to unravelling these mysteries have helped us fully understand and explain them in the light of modern psychology and have been invaluable, enlightening, and, as far as modern psychology is concerned, even historic.

Spanos's work, more than that of any other "hypnosis" theorist, has forced those who believe hypnosis to be a "state" or a "condition" involving some special psychological processes to abandon this and other "taken-for-granted" cultural beliefs about what hypnosis is and is not. It has also forced psychologists to recognize that hypnosis is only one more form of social behavior and that all hypnotic responding is context dependent, that is (pp. 19-20),

> it is determined by the willingness of the subject to adopt the hypnotic role, by their understanding of what is expected of them in that role, by their understanding of how role requirements change as the situation unfolds, by how they interpret the complex and sometimes ambiguous communications that constitute hypnotic suggestions, by their willingness to use their imaginal and other cognitive skills to create the subjective experiences called for by suggestions, and by how feedback from the hypnotist and from their own responding influences the definitions they hold of themselves as hypnotic subjects and the interpretations they apply to their hypnotic experiences.



As one of Theodore X. Barber's students and collaborators, Spanos knew from the outset that hypnotic behavior is "meaningful, goal-directed social action and much more ordinary than it initially appears." This is also true for all of the traditional dramatic behaviors of "hypnotized" people—positive and negative hallucinations, involuntary responses, and so on. Such things, when critically examined, "turn out to be much more mundane than they originally appeared." People do not go into "trance states"; they do not become blind or deaf; they do not acquire any special or unusual abilities such as unusual physical strength or an inability to feel pain; and they do not ever lose control over their behavior (Baker, *They Call It Hypnosis*, Prometheus, 1990).

As Spanos tells us with great clarity (p. 39):

> Hypnotic behavior looks unusual because hypnotic subjects are asked to do unusual things, things that in the normal course of everyday life people are rarely called upon to do (e.g., behave as if they cannot bend their arm or as if they cannot see a clearly visible number on a page). . . . Excellent hypnotic subjects choose to become absorbed in suggestions in the same way that many people become absorbed in movies and novels—to the exclusion of other things going on around them. . . . Excellent hypnotic subjects respond to the requests of a legitimate authority figure (the hypnotist) in the same way that most of us respond to the requests of authority figures in everyday life. Excellent hypnotic subjects sometimes misdescribe their experiences to create the impression they wish to convey, as all of us do in many everyday situations. "Trance states" and

> unusual cognitive abilities are no more required for an understanding of hypnotic behavior than they are required for an understanding of other social behavior.

Spanos is telling us formally what stage hypnotists and professional magicians have known informally since the turn of the century—hypnosis is a simple process involving social conditioning, that is, compliance in following the directions of an authority figure, physical relaxation, focusing one's attention within, following verbal suggestions, and then turning on one's memory and imagination. It is that simple; nothing more is required. Anyone can learn to hypnotize others or to behave this way by oneself in five minutes or less if such behavior is either needed or warranted.

Spanos also blows gaping holes in the current beliefs about hypnotic amnesia, posthypnotic responding, and so-called "brainwashing." Hypnotic amnesia does not occur spontaneously following the termination of hypnosis. So-called hypnotized subjects retain full control of their memory processes. As for posthypnotic responding, this too is shaped by the subjects' beliefs about what is expected of them. As for people being "brainwashed" into behaving like mindless robots, this too is a "cultural myth."

It is now well established that memory is reconstructive and filled with fabrications and distortions, and any psychotherapy emphasizing the recall of forgotten childhood events is certain to provide illusory memories and confabulations—fictions based on suggestions. Furthermore, and in contrast to the claims of incest-resolution therapists, we now know that most true victims of childhood abuse have difficulty "forgetting" the traumatic events rather than "recalling" them. In general, Spanos tells us, hypnotic subjects are "at least as likely as nonhypnotic subjects to make errors in recall, to be misled by leading questions, to confuse imaginings with real memories, and to be overconfident in their recall." We also know that, despite what many therapists believe, "the painfulness of recovered abuse memories does not validate them."

Spanos also provides a highly insightful and amusing chapter on the UFO abduction phenomenon. He sees it as quite similar to ritual-abuse memories. He explains in detail how abduction memories are formed, why the narratives are similar in content, and how they are shared and interpreted in the various alien-abduction support groups. In his words (pp. 128-129):

> Thus, the complex, elaborate, and detailed "hidden memories" of alien abduction that are recalled with great emotion during hypnotherapy; the traumatic "memories" of repeated abductions going back to early childhood; and the "memories" of rape and sexual abuse by aliens that were "hidden" since childhood are all confabulations. None of these are real memories of actual occurrences. Instead, they are fantasies that are believed to be memories both by those who generate them and by those who encourage and legitimate them in therapy. . . . Because UFO abduction memories are illusory, a great deal of caution should be exercised before accepting the reality of any other memories recovered for the first time during psychotherapy.

Spanos's unique and most important contribution in this area, however, is his theory of multiple identities. In a series of clever hypnotic-regression experiments, Spanos and his coworkers had subjects create a number of multiple selves, or past-life identities. These past-life personalities created by the demands of the hypnotic-regression situation were always based on historical times and places the subjects were familiar with or those in which they had a special interest. Subjects who believed in reincarnation were prone to interpret their fantasies as evidence of real prior identities, and this "reality" was particularly strengthened if other believers concurred.

Such multiple-identity enactments are quite similar to enactments of spirit or demonic possession and are, in no way, only symptomatic of pathology. Such enactments, Spanos shows, occur under a wide range of circumstances, among different kinds of people, and they serve a number of different social functions. Moreover, historical manifestations of demonic possession closely resemble historical manifestations of multiple-personality disorder (MPD). As with cases of demonic possession, "the more attention paid to the dramatic symptoms displayed by the patient, the more extensive, elaborate, and dramatic the symptomatology has tended to become." Moreover, as Spanos and others are well aware, the very procedures (e.g., hypnotic regression) used to diagnose and treat MPD are also the same techniques that generate additional personalities. Particularly valuable here are Spanos's chapters on the history of possessions and the social functions that these possession states serve, and how dual states of consciousness, such as dissociation, arose from possession states and how dual consciousness led to the diagnosis of "multiple personality." It is now clear that MPD, like Charcot's "grand hysteria," is also "a contextually supported social product that is shaped by diagnostic practices and legitimated as a 'real disease' by psychiatric authority."

Spanos also makes it clear that MPD is shaped by social learning and an unwitting conspiracy between the patient and the therapist to look for alters (alternate personalities). There can now be little question that all cases of MPD are iatrogenic, that is, caused by the therapist. There also can be little doubt that the older beliefs in physiological differences between alters, the life-long effects of early trauma, satanic-cult abuse, and what have you, are all fallacious and have led to the recent MPD epidemic.

Spanos's book is a long-needed, extensively researched, breath of fresh air, as well as a carefully documented overview of the errors, fallacies, therapeutic misunderstandings, and malpractices surrounding the use of hypnosis, hypnotherapy, regression therapy, dissociation, so-called multiple-personality

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disorders, and current psychiatric efforts to turn every aspect of normal human behavior into a medical disorder. For anyone in the mental health field who wishes to be fully and accurately informed about these issues, this book is required reading. For skeptics and anyone else who wishes to understand the *true* nature of hypnotic behavior, the child-abuse/false-memory phenomenon, hypnotherapy in general and the multiple-personality-disorder claim in particular, they are urged to read this provocative and authoritative book. □

Today's Higher Learning: Students Who Don't Study

HENRY BAUER

Generation X Goes to College: An Eye-Opening Account of Teaching in Postmodern America. By Peter Sacks. Open Court (Carus Publishing), Chicago and LaSalle, Illinois. 1996. ISBN 0-8126-9314-0. 208 + xiv pp. Softcover, $17.95.

Forget about scientific literacy or critical thinking or combating New Age mysticism: the situation is considerably worse—students today don't think that learning *anything* matters . . .

> Scattered mostly in the back and far side rows were young males with professional sports baseball caps, often worn backwards. Completing the uniform . . . was usually a pair of baggy shorts, a team T-shirt, and an ample attitude. Slumped in their chairs, they stared at me with looks of disdain and boredom, as if to say, "Who in hell cares . . . ? Say something to amuse me."
>
> I would encounter this look and The Attitude often . . . a look of utter disengagement.

Thus Peter Sacks on his baptism as a teacher. *Generation X Goes to College* should reassure the many teachers who have worried that their personal charisma had forsaken them. It is also a needed *public* signal of the major cultural change that has overtaken higher education. Sacks deserves thanks for seeking to have us acknowledge what we have jointly, though unintentionally, wrought. The least we can do is to read his book, think about it, and talk about it with everyone who will listen.

Sacks came to college teaching from a career as a professional journalist: "I left daily journalism with the intention of trying something different, looking for a new challenge." But in the world of higher education, he found a story he "had to tell." The book cannot be dismissed as a self-serving piece from the professoriate. As he states, "[G]etting tenure . . . wasn't that important to me; I was more than willing to get back into the newspaper business." Throughout the book, Sacks refers to his institution (a large suburban community college in the West) only as The College; and all names have been changed.

The book has two parts. Part One, "The Sandbox Experiment," tells of Sacks's experiences in the classroom, a very different place from in his own student days, between one and two decades earlier. What Sacks finds as a teacher is that neither administrators, nor faculty, nor students seem to care about learning or standards. Administrators just want students to be content; students just want good grades without effort and blame the faculty if they don't get them; faculty increasingly are just going along to get by.

Sacks's chairman even suggests he take an acting course to improve his class-pleasing ability. Colleagues advise him to teach to the evaluations. So Sacks carries out his "Sandbox Experiment": Could he attain tenure and praise from his peers and superiors by forgetting about high standards and "pandering, usually in the form of grades"?

Yes, of course he could and did: "Excellence wasn't really the point. . . . [T]he real point was whether you kept students sufficiently amused and entertained."

The descriptions in *Generation X Goes to College* are graphic and authentic. What college teacher could fail to guffaw on reading how Sacks started his teaching career? "I figured [the students] would read the assigned books, take notes when I lectured, and show up for class. I expected students to be adults and that I could therefore treat them as adults." And, "Recalling the reading demands I had in college, I asked the students to read approximately one book per week."

Sacks argues convincingly that the anonymous "evaluation" of instructors by their students leads inevitably to grade inflation, which has now been joined by The Attitude of unrespectful students who expect entertainment plus good grades. A demanding and rewarding higher education thereby goes out the window.

Those who would dispute Sacks's report should read the following: Oscar Handlin's "A Career at Harvard," *American Scholar*, Winter 1996; Paul Trout's "What Students Want: A Meditation on Course Evaluations," *Montana Professor*, Fall 1996; John Stone's "Inflated Grades, Inflated Enrollment, and Inflated Budgets. . . ," Education Policy Analysis Archives (http://seamonkey.ed.asu.edu/epaa/abs3.html); John Damron's "Instructor Personality and the Politics of the Classroom" (http://vax1.mankato.msus.edu/~pkbrandon/Damron_politics.html); Larry Crumbley and Patrick Moore of the Society for a Return to

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Academic Standards (http://www.tamu.edu:8000/~crumble/sfrtas.html and http://www.ualr.edu/~epmoore/index.html); John Schommer's "A Fable of Reform," *American Mathematical Monthly*, February 1996; and my own report, "The New Generations: Students Who Don't Study," forthcoming in the *Journal of AOAC International*.

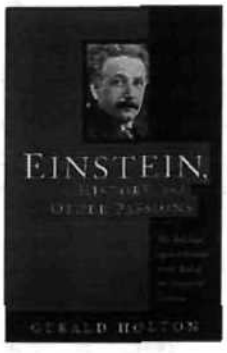
In 1986, 75 percent of my students in freshman chemistry did better on their final exam than on quizzes—as they should, given the same type of multiple-choice questions on the same material; but by 1993, only 30 percent were doing that! I have similar evidence from others in many other places. The 1995 survey of college freshmen by the Higher Education Research Institute showed high school seniors spending less time studying or doing homework (only 35 percent reporting at least six hours per week) and the highest percentage ever of students being frequently bored in class (34 percent). How can college suddenly transform these individuals into students motivated to learn and spend time, *lots* of time, memorizing and working problems and *thinking*?

Part Two of *Generation X Goes to College*, "Education in Postmodern America," tries to make sense of the cultural tsunami that has submerged us. It is a product of postmodernism, Sacks suggests. Another symptom of the cultural trend that Sacks points to is "the largest single section in the entire [nationally famous book-] store, consisting of best-selling works on angels, UFOs, paranormal phenomena," and the like, while the science section is by comparison tiny: "The apparent revolt against reason and thoughtfulness . . . the overwhelming dominance of America's amusement culture, [isn't] limited to the habits of twenty-year-olds."

For Generation X, "truth" and "reality" are negotiable—mere images on a screen. "Generation X is not a thing; it's the lack of a thing. . . . [E]verything is up for grabs." The pervasive notion is that of customer-consumer as king. Consider what student-as-consumer means: "How hard should a consumer have to work at buying something?"

Dismayed though Sacks is over the condition of today's students, he is clear that they are not to blame. They have been "conditioned by an overly nurturing, hand-holding educational system not to take responsibility for their own actions." The prime responsibility surely rests with "devotees of . . . customer-driven education . . . [and] enrollment-maximizing educational administrators" who foster an atmosphere in which "a faculty member must exert near Herculean effort to make the necessary accommodations to ensure that students are happy." He saw that "faculty members were reluctant to uphold grading standards because they believed they wouldn't be supported by administrators when push came to shove." "The teachers . . . were going easy on students because they were afraid for their jobs. That's how grade inflation [became] institutionalized, and virtually nobody was willing to acknowledge this."

Blame surely also attaches, as is so unhappily the norm in academe, to faculties that will not stand up to administrators. Perhaps the strongest argument against the assertion that tenure safeguards academic freedom may be the empirical fact that tenured full professors are no more willing than neophyte instructors to state important truths unwelcome to administrations. □



The Romantic Rebellion

DANIEL STERN

Einstein, History, and Other Passions: The Rebellion Against Science at the End of the Twentieth Century. By Gerald Holton. Addison-Wesley Publishing Co., Reading, Mass. 1996. ISBN 0-201-40716-7. 240 pp. Softcover, $14.

At the Smithsonian Institution's Museum of American History a new permanent exhibit that presents the role of science in American culture has been established. There, one can read Einstein's 1939 letter to President Franklin D. Roosevelt in which he used his influence to warn of the possibility that the Germans were developing an atomic bomb. FDR's response was the now-historic Manhattan Project. After World War II, Congress showed just how delighted it was with the success of this scientific collaboration by providing full support to all fields of science. Thus was forged an implicit contract between science and society.

This optimistic identification of science with economic, social, and even moral progress has today been largely eroded by negative perceptions of science and scientists. Most of the displays just around the corner from Einstein's letter reflect this looming cynicism, as they are devoted to what Gerald Holton calls "the hazards of science and the public's disillusionment with technology."

Holton, a professor of physics and of the history of science at Harvard, set out, in *Einstein, History, and Other Passions*, to dispel such widespread disenchantment and return the scientific community back to the respected status it held in post–World War II America. The need for a leader of this sort is imperative as society's reverence for science is clearly diminishing. The media dedicate relatively little attention to scientific issues; the rate of scientific illiteracy, even among

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our intellectual and political leaders, is rising; and there is a growing concern among scientists that little effort within the educational system is being made to emphasize the benefits or significance of pursuing a career in their field. Congress has already begun to cut scientific funding, drastically reversing the support science has enjoyed for the past five decades, while educators, scholars, and social commentators often depict science as a soulless activity, devoid of any passion.

Holton calls this countermovement a "Romantic rebellion," attributing it to various factors including: the fear brought on by abuses of science and technology resulting from corporate or governmental policies, accounts of laboratory fraud and misconduct, misguided notions of "New Age fanatics," an increasing sense of depersonalization, and environmental concerns.

He observes that not only is science presented as being unable to generate control over "nature's forces which cause our burdens and ills," but it is deemed the very source of the disasters of the past century—a period ironically considered by scientists to be an era of great discovery and progress.

Holton himself remains true to the intellectual tradition. His passion for science and his belief in its power to help guide humankind in its battles against ignorance, disease, and other such evils are woven throughout most every page. However, the foundation he worked so well to set in the first part of the book about science's public image, both past and present, is soon abandoned for a discussion of Einstein and an elaborate presentation of the history and philosophy of science.

Holton is indeed an authority in these fields. However, his description of Einstein, and the vast influence he has had on science and culture, backfires against the originally intended plan, which was to use Einstein to show that science is not a dull, impersonal field, but that scientists can be highly imaginative and make an immensely positive impact on society.

For starters, basing a defense of science as a passionate and creative field on the life and work of Einstein makes little sense considering the Romantic rebellion is not being executed against the science of Einstein's era, but against today's. Holton never offers any examples of current leaders in science who embody Einstein's humane and spirited nature or work to educate the public as Einstein did. Science is indeed difficult to popularize in today's times, especially because of its overwhelming complexity, but that makes it all the more important for the scientific community to close the gap between itself and the general public. The most outspoken individuals currently hail from the Romantic rebellion, while, as Holton says, the scientific community has "responded with quiet acquiescence." Einstein would never have stood for this.

Also, whereas Holton is well aware that the "proverbial man on the street is quite blissfully ignorant" of the applications of Einstein's theories in such practical devices as the laser, calculator, computer, and even America's favorite pastime, television, he doesn't seem to see the full implications it entails. That Americans for the most part are only cognizant of the superficial aspects of Einstein's influence on the world, namely that he was some genius who knew a lot about scientific stuff including $E=mc^2$, is indicative of the existing chasm between the scientific and general communities. The abstract image of Einstein as a wizard-like scientist does nothing to help elevate science to a respected position among lay people. Holton thus wrongly interprets the influence Einstein may have on modern society.

Not only are most Americans unaware of what this intellectual figure actually contributed to science, but many who have tried to understand his work have failed, as is evident through Holton's own examples. "Ethical relativity" and "cultural relativism" are but two of many misguided ideas that hoped to find vindication through Einstein's relativity theory. What Einstein's theory really provides, though its name can be misleading, is a means of expressing the laws of nature in an absolute manner regardless of an observer's perspective. It's not that "everything is relative," but that "some things are invariant," for instance, the speed of light.

Furthermore, most people do not think at Holton's level; they are concerned, for the most part, with everyday issues like paying their bills and fulfilling their bodily needs. The majority of people outside science simply cannot relate to such things as quantum mechanics or supersymmetry, let alone understand them. The fact is, religion, not science, is the means whereby many find "truth" and comfort. Accordingly, reconciling modern science with theological thought poses perhaps the greatest challenge to reversing today's cultural shift, and though it is the most important task for scientific leaders, Holton essentially avoids the issue.

Despite these shortcomings, readers can benefit from this book in several other respects. Those interested in learning how to fully understand an event in the history of science will find Holton's meticulous criteria for achieving such a goal extremely useful, as they will his discussions of Einstein's model of scientific progress and his notion of what the thinking process involves. This analysis of Einstein's scientific side is well-balanced by amusing anecdotes of his exciting life and excerpts from passionate letters he wrote to Mileva Maric, the woman he would later marry and ultimately divorce.

Unfortunately, what remains at the end of this book are the same questions Holton flirted with at its beginning: Why exactly is Romanticism's celebration of personal experience and metaphysical thought reappearing, and what precisely should be done about it? Is humanity ready, morally or psychologically, for the products of its scientific endeavors? Without these answers, science cannot flourish, nor may there be much of a civilization in which science can even exist. □

I'm Not a Scientist, But I Play One on TV

EDWARD SLOWIK

Conjuring Science: Scientific Symbols and Cultural Meanings in American Life. By Christopher P. Toumey. Rutgers University Press, New Brunswick, N.J. 1996. ISBN 0-8135-2285-4. 197 pp. Softcover, $ 17.95.

For many philosophers, scientists, and readers of the SKEPTICAL INQUIRER, a book whose admitted focus is on the "cultural meanings" and "symbols" of science is bound to evoke painful images of a sociologically based assault on the alleged rationality and objectivity of science. *Conjuring Science,* by Christopher P. Toumey, is not one of those books, however. The author (a professional anthropologist) is not concerned with postmodern analysis, but with demonstrating and documenting how the authority and prestige of science in modern American society is often pressed into service to validate theories and beliefs that do not warrant such respect.

By "conjured science," Toumey means the phenomenon whereby "one could use the common symbols and images of science, as understood by nonscientists, to make it seem that scientists were bestowing the plenary authority of science on various causes and ideologies that had nothing to do with science" (p. 8). As a brief, well-known example of this process, Toumey asks us to recall the television ad from the 1980s that featured an actor, donning a white lab coat, who proclaimed, "I'm not a doctor, but I play one on TV." That an advertising company could so successfully and readily promote a medical product by employing the symbols of scientific respectability and justification, in this case a simple white lab coat, is symptomatic for Toumey of just how far the gulf has widened between science as understood by scientists and science as understood by the general public. In presenting a history of the development of this modern predicament and many infamous examples of conjured science in action, Toumey's book proves to be enormously entertaining and informative, and it has the added advantage of being written in an engaging, accessible style.

The heart of Toumey's book is a series of five case studies depicting various forms of conjured science in modern America: the antifluoridation movement, alternative theories of the AIDS/HIV phenomenon, the cold fusion incident, biblical creationism, and the development of the "mad scientist" character in fictional books and films. Creationism is a particularly conspicuous instance of an unjustified "donning of the garbs" of scientific respectability. The "mad scientist" stereotype is interesting in that it is obviously not a case of hijacked scientific authority, but an example of how a society's beliefs and fears can coalesce into a popular fictional character that represents those cultural values or meanings (i.e., the fear of abstract, "dehumanizing" scientific research). Today, many scholars have found new symbols to represent these fears, such as the supercollider and the human genome project.

Before launching into his case studies, Toumey provides a synopsis of the historical conditions and influences that shaped the development of the public's understanding of science in America. A central theme that emerges in this discussion, and pervades much of the remainder of the book, is the failure of science education and popularization.

In the early twentieth century, a new scientific methodology was introduced, one that was rational, secular, naturalistic, and "science for science's sake," in contrast with the more pragmatic, religiously oriented view of science that prevailed in early America. On Toumey's estimation, the creation of this modern scientific research "ethos" was marked by a corresponding decrease in the quality and quantity of the attempts by scientists and educators to teach the public about the findings and values of this new methodology. One of the unfortunate consequences of this failure to inform the larger society, argues Toumey, was the eventual estrangement of the symbols and meanings of science, as understood by the lay person, from the actual content of science, as conducted by scientists. Thus, the groundwork for the possible abuse of these symbols and meanings is an inevitable byproduct of the lack of effective science education in America, both in and out of school.

Needless to say, Toumey's approach to these social and historical developments, which he dubs "Anthropology of Science," will probably not please all readers: some historians will likely disagree with the specific details or conclusions of his historical analysis of American science and science attitudes; and philosophers will certainly worry about the very possibility of drawing a distinction between "conjured" science and supposedly "normal" or "legitimate" science, since the "demarcation" problem, as it is called, is a much discussed issue in the philosophy of science. Nevertheless, Toumey's book raises a number of interesting and troubling points about our culture's understanding of science and addresses them in an intelligent and insightful manner. Indeed, for the many scientists and academics who generally discount the value of sociologically or culturally based investigations of science, *Conjuring Science* may spark a newborn respect for the important and valuable lessons that such studies can provide. □

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The Call of Distant Mammoths. **Peter D. Ward.** Copernicus, Springer-Verlag, New York, Inc., 175 Fifth Ave., New York, NY 10010. 1997. ISBN 0-387-94915-1. 241 pp. Hardcover, $26. University of Washington geoscientist and paleontologist Ward argues that the mass extinction of the mammoths was due to human hunting. He also portrays earlier mass extinctions and their probable causes.

Deception and Self-Deception. **Richard Wiseman.** Prometheus Books, 59 John Glenn Dr., Amherst, NY 14228-2197. 1997. ISBN 1-57392-121-1. 266 pp. Hardcover, $25.95. Wiseman, a U.K. psychologist, has carried out extensive academic research into the psychology of deception, psychic fraud, and the paranormal. This book vividly describes many of the experiments he has undertaken to test the validity of well-known psychics. He describes ways to investigate psychic claims and outlines many of the techniques used to fake psychic ability.

The Demon-Haunted World. **Carl Sagan.** Ballantine Books, New York, NY. 1997. ISBN 0-345-40946-9. 457 pp. Softcover, $14. This is the welcome trade paperback edition of Sagan's 1996 book (excerpted in the March/April 1996 *SI*) on scientific method, critical thinking, skepticism, scientific literacy, pseudoscience, hallucinations, false memories, UFO-abduction claims, and the "siren song of unreason." Our reviewer, James Randi (July/August 1996), called it a "battle-cry" for reason and rationality and urged readers to buy several copies and donate them to school libraries.

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Does Nature Know Best? **Roger Coulombe.** American Council on Science and Health, 1995 Broadway, 2nd Floor, New York, NY 10023-5860. 1997. 43 pp. Paperback, $3.85. New updated edition of consumer booklet attempts to provide a balanced look at natural carcinogens and anticarcinogens in our food.

False Profits. **Robert L. Fitzpatrick and Joyce K. Reynolds.** Herald Press, 1235-E East Blvd. #101, Charlotte, NC 28203. 1997. ISBN 0-9648795-1-4. 227 pp. Softcover, $12.95. The first book-length analysis and critique of the multilevel marketing industry in America. Examines the delusions surrounding multilevel marketing and pyramid schemes, with special emphasis on the Airplane Game pyramid scheme that swept cities and campuses in the late 1980s. Although not as extreme as UFO beliefs and other such frauds, such delusions are strong enough to lead otherwise ethical people into fraud and folly.

The Menace of Multiculturalism. **Alvin J. Schmidt.** Praeger Publishers, 88 Post Road West, Westport, CT 06881. 1997. ISBN 0-275-95598-2. 232 pp. Hardcover, $39.95. A condemnation of "politically correct" multiculturalism as ideology, with discussion of the author's dismay at the movement's historical revisionism, linguistic maneuvering, limitations on speech, and dismantling of the traditional image of the family unit.

Remote Viewers: The Secret History of America's Psychic Spies. **Jim Schnabel.** Dell Publishing, 1540 Broadway, New York, NY 10036. 1997. ISBN 0-440-22306-7. 452 pp. Paperback, $5.99. Investigative science journalist Schnabel, author of previous books examining proponents of crop circles and UFOs, here delves deeply into the world of those who promoted and carried out remote-viewing/psychic-spying experiments and investigations for the military and the government intelligence agencies. It's based on interviews with virtually all the major people involved in this strange business, with which the author clearly became fascinated (taking part in remote-viewing experiments himself at times).

The UFO Invasion: The Roswell Incident, Alien Abductions, and Government Coverups. **Edited by Kendrick Frazier, Barry Karr, and Joe Nickell.** Prometheus Books, 59 John Glenn Dr., Amherst, NY 14228-2197. 1997. ISBN 1-57392-131-9. 315 pp. + photo insert. Hardcover, $25.95. Timed to the fiftieth anniversary of the Roswell "event," this first-ever single-subject anthology of SKEPTICAL INQUIRER articles includes virtually every major article—some newly updated by the authors—that *SI* has published on claims of UFOs, crashed flying saucers, the Roswell Incident, and alien abductions. In an area in which skeptical works are rare, this book provides needed critical, scientific evaluations. Included are revelations of the original stimulus for the Roswell legend—the New York University/Project Mogul balloon-flight/nuclear-detection experiments in 1947. There is also a never-before-published article on natural explanations of alien abduction experiences.

What Einstein Didn't Know. **Robert L. Wolke.** Carol Publishing Group, 120 Enterprise Ave., Secaucus, NJ 07094. 1997. ISBN 1-55972-398-X. 271 pp. Hardcover, $19.95. A professor emeritus of chemistry provides scientific answers to scores of everyday questions: Why won't your shower temperature stay the way you set it? How do microwaves really cook food? Why won't oil and water mix? What's the best way to get ketchup out of a bottle? Why do ocean waves always roll in parallel to the shoreline? Are all liquids wet? What started atoms and molecules moving, and why don't they run down?

The Whole Tooth. **Marvin J. Schissel, D.D.S., and John E. Dodes, D.D.S.** St. Martin's Press, 175 Fifth Ave., New York, NY 10010-7848. 1997. ISBN 0-312-15229-9. 320 pp. Hardcover, $23.95. A consumer book to help you find a good dentist, keep healthy teeth, and avoid incompetents, quacks, and frauds. Includes a primer about quackery.

— *Kendrick Frazier*

Flam, Faye. "Therapeutic Touch? Skeptics Here Bet Against It." *Philadelphia Inquirer,* January 21, 1997, pp. 1, 6. Science writer's informative report on how local skeptics led by nurse Robert Glockman offered $742,000 for proof that this hand-waving method supposedly based on "energy fields" and "auras" works.

Frantz, Douglas. "Scientology's Puzzling Journey from Tax Rebel to Tax Exempt." *New York Times,* March 9, 1997, pp. 1, 30–31. Major, lengthy investigative report into the stunning victory of Scientology over the Internal Revenue Service: the IRS's 1993 reversal of twenty-five years of opposition by granting tax exemptions to every Scientology entity in the United States. The *New York Times* investigation found that the exemption followed a series of unusual IRS actions that came after an extraordinary campaign orchestrated by Scientology against the IRS and its employees—including investigations into their private lives.

Gould, Stephen Jay. "Nonoverlapping Magisteria." *Natural History,* March 1997, pp. 16–22, 60–62. Gould considers the reasons behind the recent statement by Pope John Paul II on behalf of evolution. Gould realizes that in contrast to the 1950 statement by Pope Pius XII the new one is no longer a grudging acknowledgment of evolution but a welcoming announcement that evolution is now a plausibly proven fact that should be accepted by people of goodwill. Throughout, Gould reflects on the two separate, and equally legitimate, domains overseen by science and religion—their "nonoverlapping magisteria"—and he concludes with, first, a personal statement about religion that is affirming to both science and religion, and, second, a postscript tribute to Carl Sagan.

Hitt, Jack. "On Earth As It Is In Heaven." *Harper's,* November 1996, pp. 51–60. A writer travels with the apostles of "creation science."

Kelly, Ivan. "Predicting the Future." *Muse* (Smithsonian Institution), May 1997, pp. 16–25. *Smithsonian* magazine's new kids' publication publishes a well-illustrated article by psychologist Kelly about people who think they can predict things but can't: fortunetellers, astrologers, psychics, palm readers, or ordinary people with "hunches." Shows how to distinguish these from scientific predictions.

"Remind Me One More Time . . ." *The Economist,* January 18, 1997. Report on how the weight of evidence is turning strongly against the theory that traumatic memories of sexual abuse are repressed in childhood and can be "recovered" later with the help of a therapist. Accompanied by a commentary, "Courting Abuse," urging that memories "recovered" in therapy should not be allowed in court.

Wheeler, Mark. "Allen Encounters." *Discover,* February 1997, pp. 82–85. Lively and funny profile of author/entertainer Steve Allen and his involvement on behalf of critical thinking and against pseudoscience on television as co-chair of CSICOP's new Council for Media Integrity. "In a world that lacks critical thought, Allen seems to be trying single-handedly to make up for the rest of us," says the author, who provides numerous examples before ending with one of Allen's silly-but-wise parables: "Look for the evidence/Look for the Proof/Or else you're acting/Like an awful goof."

—Kendrick Frazier

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Cranes and Skyhooks

RALPH ESTLING

I've been rereading Daniel C. Dennett's *Darwin's Dangerous Idea.* Dennett makes great play with the difference between what he calls cranes and skyhooks. Cranes are notions that you, I, and Daniel C. Dennett approve of; skyhooks are the gods, the supernatural and the paranormal, the irrational.

He takes a very materialistic stance. Some consider his views of reality too narrow. His is the simplest view, what philosophers and logicians call the most parsimonious approach, the one William of Occam's razor (if not William of Occam, who was a devout Christian) would approve of. Of course, what is simplest may not be what is best or most true; it's only a starting point, a point of reference. From there it's a question of whether a skyhookish methodology answers the problem better. I've yet to come across one that does, and, of course, this may only show my own inveterate, irrational bias for cranes. I confidently believe that everything is held in place by a clearly defined crane, that of general relativity.

Newton's view of reality certainly had a strong element of skyhookishness about it, in the notion of action at a distance, and this distressed Newton to no end. The cranelike explanations of Aristotle and Ptolemy turned out to be wrong, from which we can see that cranelike explanations are not invariably or of necessity right. What they try to do is remove the skyhooks, the gods, from the action. The fact that the crane can be and often is wrong does not prove that the skyhook was right, only that we need a better crane. Once we settle for skyhooks, we give up on seeking explanations in any rational form. There is still plenty about gravity that's not understood, and the main task at the moment (and for the last sixty years or so) in physics is to get some sense out of combining relativity and quantum gravity. No one knows how this is to be done; maybe superstrings will solve the dilemma, maybe not. But I think we can be very sure that the solution, whenever it arrives and whatever it turns out to be, won't lie in the lap of the gods.

Of course, that's only an opinion, one based on past experience; and, as David Hume has pointed out, past experience is no sure-fire indication of present or future results. Still, Scots philosophers notwithstanding, it's the best we have to go by, and so it shouldn't be ignored, for all its clear lack of perfection in the matter of predictability. Scientists and the rest of us have opinions, outlooks, attitudes, points of view, and this is a good thing, a natural thing, so long as these opinions don't get in the way of the facts as they emerge. Working hypotheses are vital in science. It's just a question, as Humpty Dumpty said, of who is to be master, that's all. As long as we use the opinion and the opinion doesn't use us, it's all right. In the matter of free expression of opinions or their restraint, what is important is what constitutes that restraint: reason or dogma, knowledge or ignorance, a respect for truth or a craving for reassurance. And the fact that rationality and irrationality are not always readily distinguishable must not blind us to the fact that they are not the same, and distinguishing the one from the other, as best we can, should be our main intellectual job in life. Some very rational people a few years back could not conceive of all the things that a computer would be good for. Other rational people could. Irrationality didn't enter into it.

It's also a question of intelligence, imagination, and foresight, rather than simple rationality. There are plenty of highly rational people who lack those qualities, but this doesn't mean we should abandon rationality and embrace the irrational. It means we should make better use of our rationality and not let it become an excuse for avoiding innovative thinking; if we do let it, then our precious rationality is subverted into a means for mental ossification. It becomes a conservative rationality, one in which nothing should ever be done for the first time. But by then, of course, we've abandoned rationality and are well in the grip of unreason.

We are often informed that "science doesn't have all the answers," which should come as a great shock to all of us

Ralph Estling writes from Ilminster, Somerset, U.K.

who have spent our lives locked in an attic. Once science *has* all the answers, science ceases, for science consists of exploration; and once you've explored everything, there's nothing left to discover. All you can do then is make categories, compile lists, sort every item into its proper place, and that's a job for accountants and stamp collectors, not real scientists. That day may come, the day when there is and can be no new thing under the sun, or beyond it. When and if it does, that will be the end of science.

It may be the end of cranes too, of all rational attempts at understanding the nature of the universe. It may mean the return of the skyhook, of magic, mystery, metaphysics. But it has not happened yet.

For the moment, and perhaps for the next few million years, we still have our cranes. Some of them, perhaps the majority, are rusty and rickety and should be overhauled or thrown away altogether. But enough of them remain useful and should be held on to.

Let us cherish our cranes. As for the skyhooks, as John Nance Garner might have put it, they're not worth a bucket of warm spit. □

The Filling of Scholarly Vacuums

GEORGE ENGLEBRETSEN

Not even nature abhors a vacuum more than academia. Let me explain.

We live in an age when, increasingly, anything goes. This is true for music, movies, morals, and dress. It's true for art (maybe it always has been). With the exception of "anything goes" morals, the rest is not so important. But what *is* important, and highly disturbing, is the rapid spread of this kind of relativistic, no-rules, no-limits, no-rigor thinking among those who think for a living—scholars. While few physicists, brain physiologists, or mathematicians want to argue that the truths they seek depend on who they (the scientists) are, where they are, or what gender or race or nationality they are, a large number of philosophers, sociologists, and literary critics today say, in all seriousness, that since each of us creates our own reality, all truth is relative to the individual. The scholarly philosophical credentials for this nonsense were forged in the preceding couple of decades by a gang of French academics (Derrida, Foucault, Deleuze, et al.) who concocted a pastiche drawn from Marx, Nietzsche, Freud, feminism, neo-criticism, sophomoric social and political theorizing, and the like, and brought it to America, palming it off as genuine and original philosophy. The French fashion industry may be losing its hold on Western dress, but the latest French philosophical fashions are eagerly adopted by our academics. Why? How did this happen?

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For the most part, nobody pays much attention to philosophers—even within the academy. So why do these characters get such a wide academic audience? The answer is that the academy itself has changed. A century ago (even half a century ago) universities offered a fairly restricted range of academic programs. There were the hard-core sciences, the humanities, the social sciences (mainly psychology, economics, sociology, anthropology), a bit of business (maybe), and the professional schools of law, medicine, dentistry, and so forth. Go back a few more centuries and the range was even more restricted (the liberal arts, theology, law, medicine). And now? Well, you name it, we got it. University degrees can be obtained (I don't say "earned") in such demanding disciplines as Parapsychology, Life Experience, Alternative Life Styles, Women's Studies (a thousand and one kinds), Black Studies, Native American Studies, Astrology, Holistic Medicine, Holistic Law, Holistic Wholesales, Holistic Holistic, Nontraditional Art, Nontraditional Literature, and various other nontraditional nonsense. I'm only making some of this up. And forget the old tried-and-true Basket Weaving (too much work). Moreover, even within the traditional fields of study, large numbers of courses have been introduced to cater to those who seek alternative, nontraditional, nonlinear, holistic, nonrational approaches to their subjects.

Now all this new stuff is taught to (or, I should say, "shared with," since teaching is such an androcentric, Western-paternalistic, master-slave concept) eager though often subliterate students by university professors. Only the newest of these scholars are themselves the products of the new programs. The rest actually earned degrees in the old-fashioned fields (and, presumably, in the old-fashioned way). But the geometric increase of student populations since the end of World War II produced a corresponding increase in the number of

graduates going on to graduate schools. That increase, in turn, produced a corresponding increase in the number of Ph.D.'s who sought positions as university professors. These increases were not matched by a corresponding increase in the demand for professors of physics, history, geomorphology, ancient literature, medieval philosophy, or physical anthropology. The obvious solution: fill the vacuum with new courses and programs. The result: universities are no longer places of thought (including self-critical thought), research for the sake of knowledge and understanding, and expansion of mind. I do not intend to suggest that this sort of thing no longer goes on. One still finds latter-day versions of the old trivium and quadrivium in the usual places. But universities are now more and more like shopping malls; students are even referred to as "clients" or "customers"—they are catered *to, and they (or whoever pro-*vides their tuition and beer money) have to be satisfied. You say you don't like calculus? No matter. Why not try our latest course on Myth and the Hermeneutics of Feminist Cinema? You can't get your mind around mathematical logic? Not to worry. Lay back and enjoy our Contextualizing Sexuality in Daytime Television Drama.

Brad Marshall

When Alan Sokal published his wonderful parody in *Social Text* (see Martin Gardner's "Physicist Alan Sokal's Hilarious Hoax," SKEPTICAL INQUIRER, November/December 1996) and instigated all that hand-wringing, self-righteous justification, and overblown explication by defenders of scholarly bunk, most of the more traditional-minded in academia enjoyed the fun but were not surprised.

So here we are. We have many more university graduates, but not much more understanding or critical, rational judgment. We've become increasingly a society of people who consider channeling as effective as archival research for discovering the past, who believe therapeutic touch can heal more than modern medicine, who believe it appropriate to teach Klingon in the university but doubt that Latin serves any academic purpose. And why not? After all, many of them have been taught by professors who cannot distinguish between a legitimate treatise on a problem in physics and a bald, outlandish parody of it. Scholarly vacuums are created and then filled. So what if the filling is mostly hot air. Too many students want contracts with the NBA. Why not just lower the basket and move in the free-throw line? Anything can be scholarly once the term's sense is sufficiently diluted. If there are no rules, no standards, no limits, no rigor, then, of course, anything goes. All ways of thinking are equally legitimate (isn't that democracy?)—even no thinking is just fine. For as Bertrand Russell once noted, "Most men would sooner die than think. And they usually do." □

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The Darkened Cosmos III: Final Tributes to Carl Sagan

These letters conclude our series of tributes to Carl Sagan. The previous appreciations appeared in our March/April and May/June issues. We thank everyone who shared their thoughts and feelings.—Kendrick Frazier, Editor

I drove down to see my mother for Christmas on Friday, December 23, 1996. I was listening to Paul Harvey on the car radio saying that Carl Sagan had died that morning. It was very disturbing news. My loss seemed very *personal.*

When one of my heroes dies, I'm always left feeling disoriented and on my own. Without Carl Sagan's eloquence I'm now left alone with only my own personal vision to fend for itself. And now the world and I have to make do without Sagan's easily accessible, talented, intelligent assistance against the adversary "Demon-Haunted World."

Advocates for reason, rational analysis, and critical and skeptical thinking are a relatively small minority wading upstream against the prevailing currents of human intelligence seeking the least amount of effort, of traditional habits of arbitrary belief in the supernatural, as well as all the other bogus nonsense that the herd of human primates are fed and placidly consume. So, Carl Sagan wasn't "just" a hero; he was a rare and precious sort of hero. Something precious has indeed been lost, and yet Carl Sagan's life, through his achievements, writings, and *Cosmos*, will continue to enrich the lives of future generations.

Terry D. Lipscomb
Ft. Worth, Tex.

I remember, in late February of 1994, sitting in a Fundamentalist Christian Church's pews, listening to Kent Hovind calling Carl Sagan "Carl Pagan" in a desultory, insulting tone. I wondered why he picked Carl Sagan, out of a world full of true villains, to demonize. Twenty minutes into Hovind's circus act, I left in disgust. Nearly every statement of science Hovind made was flat out wrong, misstated, or a lie. In a word, he and Sagan were opposites. Thanks primarily to the efforts of Carl Sagan, I had learned enough about science and the scientific method to recognize false claims when I saw them—sadly, the rest of Hovind's audience seemed content to let Hovind deceive them. In a world with many more Carl Sagans, the room would have been empty.

And there's the rub: Carl Sagan was dangerous to ignorance, a threat to those who require thoughtless acquiescence upon authority alone. The bright light of Carl Sagan is extinguished, the darkness expands, and the purveyors of lies and ignorance breathe easier.

David Rice
San Clemente, Calif.

His specialty was planetary science, but his intellectual excitement encompassed all of the fruits of reason—the works of philosophers, cognitive scientists, poets, biologists, chemists, mathematicians, and physicists. His contributions to science were fundamental, but more wondrous yet was his devotion to bringing its insights into the lives of people everywhere. His literary and cinematic work was poetry, for it had the power to move people deeply. This power came from the beauty of his writing, a beauty surpassed only by the majesty of the vision of the universe that it conveyed; a vision that other scientists understood but rarely cared to convey to the public. Carl Sagan cared about science and about people. He brought the rich splendors of twentieth-century science within easy access of all people.

In memory of one who inspired so many people, the following words of Louisa May Alcott perhaps come closest to capturing what this wonderful man meant to us: "Far away, there in the sunshine are my highest aspirations. I may not reach them, but I can look up and see their beauty, believe in them, and try to follow where they lead."

Kalyan Raman
University of Michigan
Flint, Mich.

I took special interest in the tributes to Carl Sagan in your March/April issue. About ten years ago I published a poem in appreciation of Dr. Sagan's work. I intended to send him a copy of the poem but somehow I failed to do so. Here it is.

TO AN ASTRONOMER

Unfold the heavens for us so,
And we forget Orion, Andromeda,
Hercules
Who peopled the sky, made night home;
Take down decorations that eased
strangeness
Like heirlooms, like a child's smudges
On the doorface of a new house
And we're frightened—out of doors
again.
The numbers strain your devices to
explain
If kind to humankind would speak;
So call on metaphor for connections to
what
We know by touch and feel: give once
more
A Milky way and grains of sand upon a
beach.
We would have the sun a warm presence
Caring our crops, not mindless force
Working out a destiny by your laws.
Yet, our other nature shown in you
Must reach fruition. You grow, a forbidden fruit,
In us; an Athena struggling to be born
and,
Even in knowledge, refusing to be afraid.

Kearney Smith
Green Mountain, N.C.

I can vaguely recall a cold and snowy midwinter night as a teenager in the suburbs of Toronto. Bored and with little to do, I put on my coat and boots and walked through the sparkling cold night air to the local convenience store in search of a book to read.

I came across a paperback with a title and cover that caught my attention. Amidst a black-and-bluish, star-filled galaxy stood the title: *The Cosmic Connection*. I had never heard of the book or the author, but it intrigued me. It was fascinating and informative for a teenager trying to find his place in the universe, and, as a bonus, I found a scientific basis to frame the UFO controversy that was then as much a mainstay of the popular press as it is today. *The Cosmic Connection* had a huge influence on my fascination with science and the natural wonders of the universe.

This sense of wonder about our universe that Carl Sagan instilled in me was further elucidated by his book *Cosmos*, which

inspired me, almost fifteen years ago, to write the main body of lyrics to a song recorded in 1986 by Toronto musician Don Bell. I offer it to your readers as an ode to Carl Sagan, master scientist and teacher.

CHILD OF INFINITY

I found myself gazing skyward
Sitting on the shore of this galactic sea
Like a rock suspended in space
Waves crashing in on me

I found myself searching for answers
Pinpoints of hope against a blackened sky
Marooned on this island
We've lost our ambition to fly

Shine, shine, shine
Oh brightest star
Let me ride on a vision of light through the darkness
That blinds these eyes
I'll dance, dance, dance
From star to star
Let the lunar breeze fill my sails and carry me on
Through this night

I found myself gazing in wonder
I was so overwhelmed by all that I couldn't see
One man on one planet
Wondering how it all came to be

Then there was this blinding light
Spreading fire all through the night
I was amazed by the truth that I now faced
The seeds of evolution in my soul

I found myself one with the universe
I had made the connection with all that we are
I am the child of infinity
Born from the dust of the stars

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Barry L. Linetsky
North York, Ontario
Canada

Comet Madness

I was reading the article on your Web site by Alan Hale about the "comet madness" his comet has elicited among the public (March/April *SI* and CSICOP Web site). I read the "hate mail" concerning the claims by people that he is "hiding something" from the public. Most people I know I believe to be rational. But I am now realizing just how prevalent pseudoscience and superstition really is, especially since the mass suicide at Rancho Sante Fe. Your magazine provides a truly important service.

Amit R. Indap
Tucson, Ariz.

Robert Sheaffer's column in the March/April issue ("Methane Missiles and Comet Tales") could serve as a warning to people who push idiotic ideas. Reports on the Heaven's Gate suicide indicate that the people actually believed a spaceship was following Comet Hale-Bopp and killed themselves in the hope of joining the inhabitants.

A local TV station in Houston (Channel 2, KPRC) interviewed Chuck Shramek shortly after the suicides, since it was his photo that may have caused the cult to take this final act. I must say that if Shramek still believes that Hale-Bopp was under intelligent control, he certainly is trying to distance himself from it publicly. He now claims that he is unsure of what he saw. He is also getting a lot of e-mail about the mass suicide and is very distressed about people killing themselves over his photos and claims. I bet he's running as fast as he can.

By the way, neither he nor the TV station mentioned the object was just a star.

Carl Perrin
Stafford, Tex.

Thoughts on 'The End of Science?'

Theodore Schick premises his article "The End of Science?" (March/April) on two propositions: that "science's stock has fallen . . . precipitously in recent years" and that criticisms of the philosophical foundations of science have caused that precipitous decline. (He identifies Paul Feyerabend and Thomas Kuhn as particular culprits). Both propositions seem highly dubious on their face, but Professor Schick offers no evidence, only a few opinions, in support (John Horgan, T. Theocharis, and M. Psimopoulos).

In describing the philosophical climate for Feyerabend and Kuhn, Schick briefly runs down some of the thinking of Popper, Hume, Duhem, and Quine on the foundations of science. He concludes: "Thus we have arrived at an impasse. We can't establish science's superiority by viewing it as an attempt to verify theories through induction, and we can't establish its superiority by viewing it as an attempt to falsify theories through deduction. Perhaps Feyerabend is right that there is no way to prove the superiority of science."

But he is setting up a straw man. Of course there is no way through pure reason. Science is a human enterprise, subject to human fallibility, and grounded in empiricism. The way to demonstrate the superiority of science is remarkably simple: it works.

And, in fact, that is the conclusion that Professor Schick himself finally pulls out of the hat.

But before he gets to that, he attempts a refutation of Kuhn, writing: "If what we perceive is determined by the paradigm we accept, then it should be impossible to perceive anything that doesn't fit our paradigm." That, I submit, is an unfair exaggeration of Kuhn's thought, which might be corrected by substituting for Schick's word *impossible* the word *difficult* or the words *very difficult*. But to make such a substitution would destroy Schick's argument, because he goes on: "But if it's impossible to perceive anything that doesn't fit our paradigm, it's impossible for there to be any anomalies. And if it's impossible for there to be any anomalies, it's impossible for there to be any paradigm shifts. So if we accept Kuhn and Feyerabend's theory of perception, we must reject their history of science."

Kuhn certainly agreed that paradigm shifts were very difficult. So instead of accusing Kuhn of contradiction, Schick might have considered the possibility that his own strained interpretation caused the inconsistency he cites.

As noted above, Schick finally comes out with the obvious pragmatic defense of science. He writes: "We are justified in believing something to be true when it provides the best explanation of the evidence. Science is superior to other methods of inquiry because it usually provides better explanations than they do."

Exactly right. So why has he chosen such a tortuous route to such an obvious

conclusion? It would seem that he has done so because he wanted a vehicle to discredit critical commentators on the foundations of science. But such excessive defensiveness is not merely unnecessary (the achievements of science need no such defense) but counterproductive in the long run.

The most potentially devastating criticism of the logical foundations of the scientific method was articulated by an exemplary figure in human thought. David Hume's unanswerable critique of inductive reasoning (which Schick notes) occurred roughly two and a half centuries ago. Despite that critique, science has prospered enormously. Hume's critical analysis of all forms of dogmatism was intellectually liberating, rather than destructive. While thinkers of his caliber are, of course, extremely rare in history, one needs to be careful about attacking skeptical challengers of established thought. They may or may not be wrong-headed. But the serious writers among them deserve respect for focusing attention on fundamental assumptions, because such continuing scrutiny is in the long-term interest of the progress of human thought.

Science is not infallible—nothing human is—and should not be placed on a pedestal where its basic assumptions must be shielded at all costs from the critical analysis of heretical challengers.

Melvin H. Levine
New Bedford, Mass.

The end of science? Science as a failed ideology? Imagine, if you can, the number of automobiles that run on this planet each day, or the electrical motors that turn interminably every day, all day, or the number of electronic devices in use every hour including your pocket computer, or an interplanetary space probe that travels a precisely predicted several billion miles and caroms off the gravitational fields of two or three planets and the sun.

In the design and application of every one of those devices, engineers sat down to do their work with the implied understanding that those laws of physics were absolutes. Whether it was F=MA, e=IR, $P_1V_1=P_2V_2$, PV=RT, or one of a thousand others, these formulas were understood to be accurate descriptions of the way the world worked. Every turning motor, every plane aloft, every current carrying wire, and every chemical process attests to the infallibility of these laws of nature.

Humans did not create these processes; they discovered the reality and used that reality in a new way to suit their unlimited imagination. The reality is an objective reality unrelated to the wishes and prejudices of men and women, but by using the appropriate methods, the reality can be discovered by anyone, in any time, and in any place. And so we set up listening devices to hear electronic signals, just like the ones we produce, from deep space. We know that intelligent life on an earthlike planet, 50 or 5,000 light-years away, would be able to discover the same laws of physics that we have. There would be none there that we cannot discover, and how we or they "feel" about the matter will not change these laws.

And *never* has there been a substantiated incidence of the failure of these laws. The idea that the scientific method is not the way to find absolute truth within a given context is an irrational semantic sophistry.

James H. Yoke
Retired President
Yoke Engineering, Inc.
Vice President
Creative Innovations Unlimited, Inc.
Indianapolis, Ind.

After quoting a litany of questionable attacks on science and the scientific method, Theodore Schick Jr. offers a rather weak defense: science is superior to other belief systems because it is more likely to yield "justified" beliefs.

Science does not attempt to promote beliefs and shouldn't be regarded as a belief system. Anyone who believes on faith any of the findings of science is deceiving himself. All science does is seek and sort out evidence in favor of or against its theories. There is no trial period for a theory, after which it can be taken as "true." It stands forever clothed only in supporting evidence. The better it resists attempts to refute it, the more confident we may become that we can regard it as "knowledge." But truth is unattainable; we must be ready to reject any theory whenever good evidence is produced to the contrary.

Rather than a belief system, science is better described as a system for generating new knowledge about the natural world, tentative though that knowledge may be. It is not only the best such system but, as far as I can make out, it is the only one.

The tentative nature of scientific findings is entirely satisfactory in the practical world. Many theories probably are true; others often remain useful for most practical purposes, even after they have been refined. Refinements make theories more useful when a higher degree of precision is required. Once in a while, an established theory is shown to be wrong, and we have to change our thinking.

David Hume didn't destroy science with his skepticism; he merely showed us that the scientific method is incapable of proving anything. Science and scientists ever since have been the better for it.

Schick thinks the ability to distinguish truth from falsity is important. I don't see that this has any more to do with science than does belief on faith. Neither has contributed an iota to the accumulation of scientific knowledge.

Don Keith
Waterloo, Ontario,
Canada

. . . It's easy to say that science is "just another system of thought" and therefore no better than any other, as if a Ferrari is just another car, and therefore no better than a Yugo. Do you really think that any of these guys would step into an airplane designed according to "women's ways of knowing?" Would they go to a philosophy professor for an appendectomy?

Science is not dead, nor in danger of dying. People need answers, real answers, not self-serving guesses, and they know it. Inevitably even the worst of these academic game-players admit this, if not by their words, by their actions. We should not mistake their petulant resentment of the respect that scientists engender for a serious threat to rationality. Out here in the real world, nobody takes these guys seriously.

Steve Maas
Nonlinear
Technologies, Inc.
Long Beach, Calif.

Theodore Schick Jr. ponders the question, "Have we achieved the end of science?" Though the humble of intellect continue to yank the carpet from beneath the dig-

nity of progress—as they ever have—the situation is hardly as apocalyptic as the collapse of collective scientific inquiry. Contempt for what is perceived as arcane by the hoi polloi has long been popularized in our own and other Western cultures by those with a bill of goods of their own to proffer. Considering the number of television programs with scientific orientation (despite the proliferation of pseudoscience-oriented programming), I would consider the situation far from hopeless, especially lately.

If science is under attack, the antagonists are almost certainly individuals and institutions who regard themselves as researchers, theorists, and philosophers—hardly nonscientists by their chosen vocational distinctions. Theologians, be they creationists or otherwise, are hardly a threat, seldom even taken seriously outside of their own circles (the Vista, California, school board being the rare exception). However, *if* science *is* under attack, it is because the prey has elected to be given chase.

Science is by definition a discipline of knowledge or study incorporating a body of facts or conclusions systematically arranged and demonstrating the operation of general laws. These general laws are not arbitrary dogmata that cannot be rationally established through research. Excepting the humanities, psychology, and perhaps the more abstract frontiers of speculative astrophysics, few sciences have *not borne fruit in their appointed purpose* of rewarding humanity with problem-solving knowledge. Ideology and dogma are peripheral to, not elemental to, the disciplines of science; dogmata are not arrived at by enumerative induction, nor are ideologies formulated from known laboratory results. Likewise, hypothesis is elemental to theory, not to dogma; there is no room for doubt in dogma, which is a system of tenets or principles constructed and agreed upon without inquiry. Paul Feyerabend amuses us by barking at his own shadow. . . .

Thomas L. Munden
San Francisco, Calif.

Theodore Schick Jr. is a bit hard on Karl Popper. Popper does not require us to characterize a proposition shown to be untrue as a "scientific theory" just because it had been posed originally in falsifiable terms. To be concerned that someone might assert that astrology, creationism, and Velikovsky's theory of planetary development are "scientific" in Popperian terms is much like worrying that someone who manipulates the magic number 19 might claim to be using a form of Newtonian calculus.

It is quite true that hypotheses are almost always posed in terms that imply one or more background assumptions. It is too tedious to do otherwise. (At the extreme, these days we would have to exclude explicitly from every investigation the possibility that aliens in UFOs have planted physical evidence and given us fictional memories in a deliberate effort to mislead us!) And, on occasion, challenging background assumptions has led to new insights. But falsifiability still holds up very well as an essential element in orderly scientific thought. Some of us might choose to rephrase certain of Sir Karl's formulations, but he had it just about right.

Oliver L. Troxel Jr.
New York, N.Y.

It seems that philosophers are having a hard time drawing a clear distinction between science and pseudoscience because of the dogmatic nature of thought present in both areas.

I don't believe that the distinction rests on whether scientists attempt to disprove rather than prove theories, nor on whether theories in question may be regarded as "scientific" or "unscientific," nor on whether theories follow or precede observations. The simple distinction rests on the role that theories play in science as opposed to pseudoscience.

The dogma of science is to challenge and evaluate theories. In pseudoscience, the theory *is* the dogma. The scientist uses the theory as a stepping stone, or rung on a ladder, in an attempt to achieve a closer understanding of truth. To the pseudoscientist, the theory *is* truth, to be promoted, defended, and exploited—to question or challenge it is sacrilege. When a scientist points out flaws in astrological theory, it is regarded as an attack on astrology. If an astrologer were to identify, in a convincing way, a fundamental flaw in, say, the big bang theory, this would be regarded as furthering the work of science.

It seems to require very convoluted thinking to propose any equivalence between these diametrically opposed ways of considering the universe about us.

No field of endeavor is immune to pseudoscientific influence, human nature being what it is, but the dogmatic use of the scientific method seems to be the best way yet devised for rooting it out and restoring progress toward a fuller understanding of reality.

Robin McMeeking
Pinckney, Mich.

In "The End of Science?" Theodore Schick Jr. badly mischaracterizes my book *The End of Science*. He says that my book is predicated on the belief that "science is not the royal road to truth."

If Schick had read the book, or even the jacket copy, he would know that my thesis is *precisely the opposite* of the postmodernist position that science cannot deliver real truths about nature. My argument is that science is a victim of its own extraordinary success at discovering such truths; future scientists will never either disprove or surpass such towering achievements as the theory of evolution, DNA-based genetics, quantum mechanics, general relativity, or the big bang theory.

In a chapter called "The End of Philosophy," I show the flaws in the thinking of the famous proto-postmodernists Karl Popper, Thomas Kuhn, and Paul Feyerabend—and I do a much better job of it, if I do say so myself, than Schick does.

John Horgan
Senior Writer
Scientific American
New York, N.Y.

Theodore Schick responds:

There is a view held by many that truth is relative and thus that the results of scientific inquiry are not inherently superior to those of any other form of inquiry. In my article, I tried to articulate and evaluate some of the arguments that lie behind these claims.

A number of letters offer a pragmatic justification of science—it works. This is not the justification I proposed. For one thing, it is not that easy to specify what "working" involves. (After all, astrology, psychic readers,

the I Ching, *etc., "work" for millions of people.) But more important, even if science "works" in a way that other systems don't, that doesn't mean that science is epistemically superior to them, because something can be pragmatically justified without being epistemically justified. See, for example, Paul Moser,* Empirical Justification *(Dordrecht: D. Reidel, 1985). Those who offer a pragmatic justification of science have the entailment backwards: science isn't true because it works, it works because it's true.*

Ptolemy's geocentric theory of the universe "works" just as well as Copernicus's heliocentric theory in predicting the motion of the planets. But that doesn't mean that is it just as true as Copernicus's theory. For not only is that logically impossible, but Copernicus's theory provides a better explantion of planetary motion. For a discussion of what makes one explanation better than another and why better explanations are more likely to be true, may I suggest, T. Schick and L. Vaughn, How to Think About Weird Things *(Mountain View: Mayfield, 1995).*

With respect to Horgan's book, I did not mean to suggest that postmodernism was its sole theme, only that it was one of them, which he readily admits. As to the logical cogency of his writing, suffice it to say that dicto simpliciter *(unsupported statement) is a logical fallacy.*

Sokal's Hoax and Postmodernists' Obfuscations

Martin Gardner wisely refrained from replying to the angry letters he got (March/April, Letters) in response to his November/December 1996 column on Alan Sokal's hoax article published in *Social Text*. Here I will merely focus on Daniel Nexon's claim that postmodernists do not talk funny; that it is only "jargon" and that scientists too "are allowed to have arcane language."

This is misleading. When scientists decide to become popularizers of their knowledge they can easily convey the idea of what science is about in a didactic, crystal-clear style. Just think of the names Isaac Asimov, Jacob Bronowski, and Carl Sagan. All of them were natural teachers, and Bronowski and Sagan even launched major TV series introducing science for the general public (*The Ascent of Man* and *Cosmos,* respectively).

In his tribute to Sagan—in the same issue where Nexon tried to defend the sociologists' style—Richard Dawkins states that this natural teacher was "incapable of composing a dull sentence." Well, if there exists something in postmodernists' heavy treatises, it is, quite literally, thousands upon thousands of extremely dull and opaque sentences. Of course, this is the old philosophers' trick of passing off obscurity as profundity. But the pathology here is that the obscurantists got enthusiastic readers and even some disciples after all! As a disciple of postmodernist Michel Foucault once put it, "anything this difficult *must* be brilliant."

I am glad that Gardner called our attention to Sokal's hoax—a truly hilarious Project Alpha on postmodernist sociologists. If angry Nexon ever dares to look at this magazine again (he requested that his "subscription to SKEPTICAL INQUIRER be canceled") and reads this letter, I would appreciate if he could tell me where are the explainers of postmodernism who can speak in plain language like my heroes Asimov, Bronowski, and Sagan?

César Tort
Houston, Tex.

No One Can Predict the Future

Tuerkheimer and Vyse, in "*The Book of Predictions:* Fifteen Years Later" (March/April), restrict too severely the conclusions they derive from their data. In their conclusions they emphasize the unreliability of predictions made by psychics. Certainly they should, though this conclusion is unlikely to surprise even the readers of the tabloids in which psychics' predictions appear.

The more telling (and warranted) conclusion is: "No one is good at foretelling the future." Even the experts in their sample, making predictions in their fields of expertise and judged by lenient standards (hits and partial hits), were only correct (or partially correct) 35 percent of the time. Skeptics should beware of *anyone* claiming to see the future, even if they speak from a foundation of scientifically secured knowledge. The likelihood of unanticipated events is great even in arenas we purport to know.

The news isn't that scientists are better than entertainers as prognosticators. It's that none of us is very good.

Milton R. Blood
St. Louis, Mo.

Baseball Biases

Thomas Gilovich's wonderfully thought-provoking article ("Some Systematic Biases of Everyday Judgment," March/April) evokes a one-sided event with which all baseball fans who are skeptics will be familiar. A player on the field makes a magnificent defensive play to end the other team's inning. He then becomes the first player to bat for his team when play resumes. "Isn't it amazing," the announcer to whom you're listening will intone, "how often the player who makes a great play to end the inning becomes the very first player to bat next?"

No, it isn't—and, on the great majority of occasions (close to eight out of nine, I'd hazard), he doesn't. When the player who makes the great defensive stop isn't the first player to bat next, no one notices; it is, to use Gilovich's term, a *non-event.*

Norman Ankers
Honigman Miller Schwartz and Cohn Law Offices
Detroit, Mich.

Islamic Numerology

Thanks to Martin Gardner for his informative and clever "Farrakhan, Cabala, Baha'i, and 19" (March/April). There were, however, a couple of errors:

1. Wallace Fard started the Nation of Islam in the 1930s, not the 1950s.

2. The Nation of Islam's newspaper is not the *Free Call,* but the *Final Call.*

Readers interested in a summary of the Nation of Islam might consult Laird Wilcox's and my *American Extremists: Militias, Supremacists, Klansmen, Communists, and Others,* Prometheus, 1996.

John George
Professor of Politic Science and Sociology
University of Central Oklahoma
Edmond, Okla.

Skepticism Not Welcome?

Yesterday morning I received a telephone call from a television producer in London. She was inviting me to appear on a "scientific" program for the BBC and, in the United States, the Discovery Channel. The subject, she said, would be the scientific basis for ESP and other psi phenomena.

When I said I didn't think there was much, she asked if I was a skeptic. When I admitted I was, she withdrew the invitation.

I used to think of the BBC and the Discovery Channel as ornaments to television broadcasting—but that was quite a while ago.

Frederik Pohl
Palatine, Ill.

Inspiration and Insights

That "cancel my subscription" letter in the March/April issue (Daniel H. Nexon, page 61) inspires me to write.

Why would any rational person wish to deny himself or herself the benefits found in your publication?

Just the letters section is fully of inspiration and insights. For example, the letter from Mark W. Tiedemann (page 59) is worth the price. The tributes to Carl Sagan were wonderful!

The article by Alan Hale was timely and much needed. It was the Hale-Bopp controversy that stimulated my subscription last fall.

I will forward my check to the subscription department in order to extend my subscription for another year. Perhaps this will fill the horrible gap left by Nexon's abdication.

Richard B. Wolfe
Tacna, Ariz.

Masquerading as Objective

I am disappointed, to say the least, by your inclusion of an abstract of the article by A. Reisner "Repressed Memories, True and False" in your "Articles of Note" section (March/April). This article masquerades as an objective evaluation of the "repressed memory" controversy. It lends support to the as-yet-unproven notions that "repression" and "recovery" of traumatic memories of childhood sexual abuse are valid mental mechanisms.

I appreciate your laudable efforts in debunking creationism and paranormal claims. These myths, however, do not damage people's lives, they do not cause suicides, family breakups, and the incarceration of innocent people. The "repressed memory" myth does. By uncritically including a blatant piece of pseudoscience in your "Articles of Note," you did a disservice to the science of psychology and to hundreds of thousands of people affected by the insidious "recovered memory" movement.

Paula Tyroler
Associate Professor
Laurentian University
Sudbury, Ontario, Canada

The Reisner article you took note of pretends to be a review of published and empirical evidence into the matter of recovered/repressed memories.

Reisner's selective "findings" are typical of the recent backtracking by clinicians who used to be engaged in helping clients recover lost or hidden memories of childhood sexual abuse.

To date, the Freudian theory about repressed memories and its latter-day successors, such as dissociative memory theory, delayed memory theory, or the recent "betrayal trauma" theory (the selective amnesia for years of incest), stand naked, like the emperor devoid of scientific clothes.

Adriaan J. W. Mak
London, Ontario, Canada

The letters column is a forum for views on the matters raised in previous issues. Letters should be no more than 250 words. Due to the volume of letters, not all can be published. They should be typed double-spaced. Address: Letters to the Editor, SKEPTICAL INQUIRER, 944 Deer Dr. NE, Albuquerque, NM 87122.

HEAT PUMPS

from page 36

input mechanical energy. A heat pump running between the freezing and boiling points of water has an output of 100% for a mechanical input of only 27%. Thus the heat energy output is 3.7 times the mechanical energy input, with 73% of the output energy coming from the cold input.

Using more typical figures, say 40°F for the outside air and 70°F for the room temperature, 94.3% of the heat supplied to the room comes from the outside air. Only 5.7% needs to be supplied by the mechanical energy input. Thus the heat energy supplied is more than 17 times the mechanical energy input. In a real heat pump, where the mechanical energy comes from an electric motor, the heat output would be, perhaps, 12 times the electrical input.

If the same electrical energy were used to generate heat directly, for example, in a convector heater, the heat energy output would equal the electrical energy input. Thus a heat pump is a much more efficient way of generating heat than is a convector heater. However, this only means that convector heaters are not the most efficient way of heating your house, not that a heat pump is 1,200% efficient.

Suppose, as has been proposed by free-energy advocates, we use the heat pump's output to drive a heat engine and a generator. The engine's hot input would be at 70°F and its cold output would be the 40°F outside air. Under ideal conditions, the efficiency of the conversion back to electricity will be 5.7%. That is, the generator will supply exactly as much energy as we put into the heat pump in the first place.

This relationship applies whatever temperatures we chose as input and output. What you gain in the heat pump, you lose in the generator. In any real device, the energy out will be less than the energy in, and the overall efficiency will, sadly, be well under unity. □

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Parapsychology Subcommittee: Chairman, Ray Hyman, Psychology Dept., Univ. of Oregon, Eugene, OR 97402.

UFO Subcommittee: Chairman, Philip J. Klass, 404 "N" Street S.W., Washington, D.C. 20024.

Comet Hale-Bopp rises above New Mexico's Sandia Mountains in this predawn view on March 18, 1997. Despite Hale-Bopp's brightness, it never came close to Earth. At its closest approach to Earth on March 22, it was 1.3 astronomical units—122 million miles—from our planet.

Photo by Kendrick Frazier.

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The Committee for the Scientific Investigation of Claims of the Paranormal encourages the critical investigation of paranormal and fringe-science claims from a responsible, scientific point of view and disseminates factual information about the results of such inquiries to the scientific community and the public. It also promotes science and scientific inquiry, critical thinking, science education, and the use of reason in examining important issues. To carry out these objectives the Committee:

- Maintains a network of people interested in critically examining paranormal, fringe-science, and other claims, and in contributing to consumer education
- Prepares bibliographies of published materials that carefully examine such claims
- Encourages research by objective and impartial inquiry in areas where it is needed
- Convenes conferences and meetings
- Publishes articles that examine claims of the paranormal
- Does not reject claims on a priori grounds, antecedent to inquiry, but examines them objectively and carefully

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